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Bronze & Copper Age

राज्य संग्रहालय पुस्तकालय
प्रो० बी० एन० पुरी संग्रह
लखनऊ

By

RAM PRAKASH OJHA,

M. A., Gold Medalist

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PREFACE

This is the age of science. The subject which the book deals is "Bronze and Copper Age". For the last many centuries archaelogical discoveries were being made for bronze and copper. The book is divided in many chapters viz. Extent of the Harappan culture, climate of the Indus Valley ; Copper Hoard of the Ganga Valley ; Painted Grey Ware ; Lothal ; Pottery of Harappan Culture ; Northern Black-polished Ware ; Amri-Nal Cultures ; Hastinapur ; Indus Seals ; Malwa Culture and its various sites ; Cemetery 'H' Culture ; Kalibangan ; Town Planning of the Harappan Culture; Amusements and Pastimes of the Harappan People ; Economic condition of the Indus Valley People ; Kulli Culture ; Beads and their shapes etc. etc.

We have tried to give and discuss each and every point on the subject in detail ; and to solve the problem of readers.

We hope the book will be useful to the readers.

Publishers.

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BRONZE AND COPPER AGE

CHAPTER I

Extent of the Harappan Culture

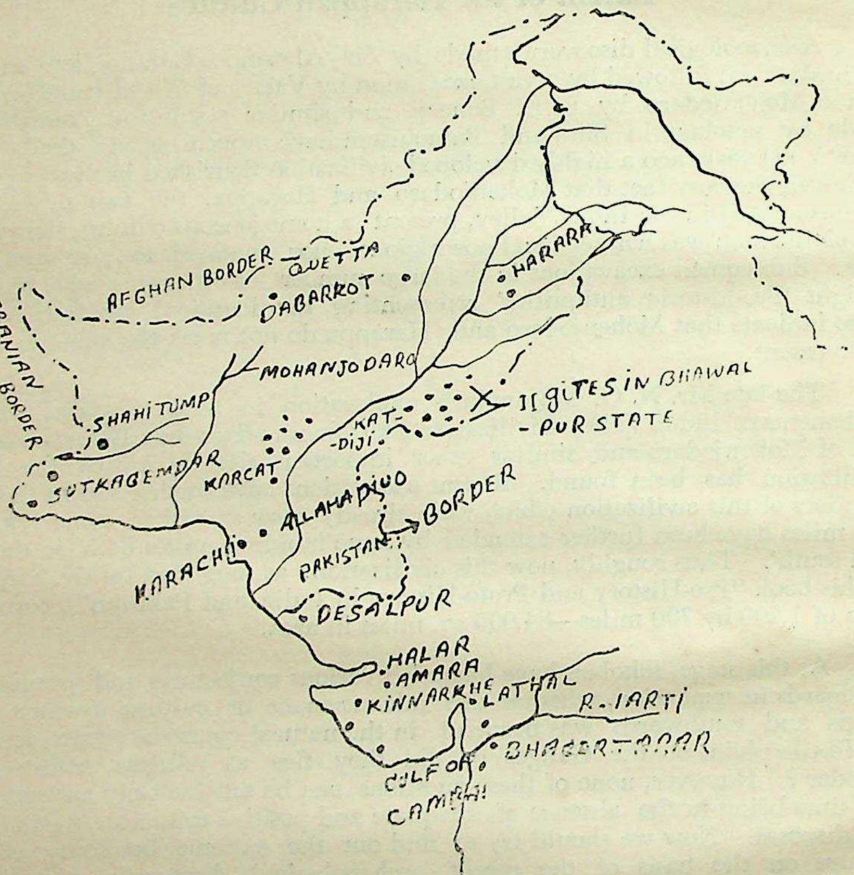
Archaeological discoveries made by Sir Alexander Cunningham and Sir John Marshall followed by a vast excavation by Vats and Wheeler at Harappa and at Mohenjodaro by R. D. Banerji and similar significant contribution made by scholars in Sind and Baluchistan have proved beyond doubt that some 5,000 years ago a highly developed civilization flourished in these regions. However, the very fact that Mohenjodaro and Harappa, the two pre-historic sites excavated in the Indus Valley, present a homogeneous culture, shows that the civilization was neither local nor regional nor confined to any restricted area. Subsequent excavations in the large number of other sites have brought to light 'Pre-historic antiquities' representing the identical civilization and these indicate that Mohenjodaro and Harappa do not mark the extreme limits of its extent.

The late Mr. N. G. Majumdar's exploration in Sind 'revealed various settlements of Indus Valley Civilization like Chanhu-daro over 100 miles south-east of Mohenjodaro and similar other important sites at which the same civilization has been found. Recent excavations have further shown that the frontiers of this civilization which were already very extensive, some 1,000 by 500 miles have been further extended by some hundred miles both in the east and south'. Thus roughly, now this civilization, as suggested by Dr. Sankalia (in his book "Pre-History and Proto-History in India and Pakistan"), covers an area of 1,200 by 700 miles—84,000 sq. miles in area.

At this stage, scholars have hazarded various conjectures and speculations as regards its expansion, whether this advancement of culture towards east-wards and southwards was peaceful in the natural course of events, towards the fertile plains of the Ganges or did they flee as refugees before some invader ? However, none of these questions can be satisfactorily answered for the time being in the absence of adequate and positive evidences, available at our disposal. Now we should try to find out the extreme boundary of this culture on the basis of the recent archaeological discoveries in all the directions.

Almost unfailing uniformity of the various aspects of the civilization such as town planning (including mud brick rampart), well aligned brick-houses, sanitation, pottery, seals, ornaments, weights and measures and method of disposal of dead indicates that this civilization stretched from Rupar in East Punjab at the foot of Simla Hills to Sutka-Gendor on the Arabian Coast (a distance of 1,000 miles). But that is not all. First of all, as stated above, this civilization was located on Harappa and Mohenjodaro—the two sites in Punjab and Sind, but later explorations have extended this vast civilization eastwards to Alamgirpur, 19 miles west of Meerut in Yamuna basin. However, Alamgirpur which continues the story of Harappan expansion in Ganga-Yamuna Doab indicates "Easternmost extent" of Harappan culture, as this site carries all the typical Harappan elements. Although sporadic occurrence of the terracotta in Buxur and Pataliputra (Bihar) indicates the expansion of this culture even beyond Alamgirpur.

If we turn towards the Punjab, we find another important site of Rupar in Ambala District on the bank of river Sutlej, which has been regarded as the north-eastern outpost of this culture, as exploration at this site has yielded two phases in a 50 feet high mound, which has produced ornaments of faience, other beads, the steatite seals, terracotta cake, chert blades and bronze celts are the replica of Mohenjodaro and Harappa which according to Dr. Sankalia needs to comment as beyond that no indication of this culture is traceable, in the present state of our knowledge.


AFGHAN BORDER
QUETTA
DABARKOT
IRANIAN BORDER
HARARR
MOHANJODARO
II SITES IN BHAWAL -PUR STATE
SHAHI TUMP
KAT-DIJI
SUTKAGEMDAR
KARCAT
ALLAHADINO
BORDER
PAKISTAN
KARACHI
DESALPUR
HALAR
AMARA
KINNARKHE
LATHAL
R. IARTI
BHAGERTARAR
GULF OF CAMBAI

INDUS CIVILIZATION SITES

Showing citios, towns and villages, other pro-historic sites and modrrn cities

Exploration during the last 10 years has extended the reach of this vast civilization southwards into Kathiawad (Rangpur, Lothal and Somnath) and as far back as 1934—36, Saurashtra had yielded evidence of Harappan penetration consequent upon the exploration of Lothal by S. R. Rao and many other sites brought to light all over Saurashtra. Similarly a number of sites have been discovered in Northern Rajasthan in the valley of Sarasvati and Drishadvati by Sri A. Stein and by A. Ghosh, out of which Kalibangan discovered in 1961 (in Ganga Nagar District) which has been regarded a third capital of Harappan Empire by Sri B. Lal. But this cannot be considered to be the extent of this culture. The discovery of three important sites beyond the shore of the Gulf of Cambay near the esturies of Narmada and Tapti about 500 miles south of Mohenjodaro found in 1957 (Megham, Telod and Bhagatrav) have yielded potsherds of the Indus civilization which have ultimately altered the shape of the civilization as previously envisaged ; in other words marks the "Southernmost boundary of Harappan culture, for the present" , as opined by scholars.

Apart from it, Sir A. Stein's explorations, have extended the influence of Harappan culture even up to Dabar-Kot, which marks the northern post of this civilization having identical cultural aspects with other important sites like Sur-Jangal and Periano-Ghundai in north Baluchistan and Kulli and Mehi in south Baluchistan. Excavation at Sutkagendor (when we turn towards west, we find) has yielded stratigraphic evidence of three major occupational phases with other characteristic Harappan elements. As suggested by Dales, 'some interesting Harappan aspects like citadel constructed on a massive fortification wall and remains of mud brick platform 7 ft. thick along with traces of bastions or towers as found in other sites are traceable here. Besides it was not an ordinary port, as recent survey of 500 miles of Makran Coast from the Pakistan-Iran border by George F. Dales, Jr. and his colleagues on behalf of the University Museum of Pennsylvania confirms that Sutkagendor could have been a port on Arbian Sea and had established trade and commercial relations with Egypt and Mesopotamia by sea route. Beyond that we do not find any site yielding Harappan elements except sporadic and thus this site has been supposed by the scholars as the "western outpost" of this culture.

Thus a proper scrutiny and survey of the influence and expansion of Harappan culture would ensure that Indus Valley Civilization seems to have embraced the whole of Sind and the Punjab, the bulk of Kathiawad and Saurashtra, the valley of North-West Frontier Province and a part at least of the Gangetic basin, having Dabar-Kot in north, Sutkagendor in west, Rupar in north-east, Alamgirpur in east and Megham, Telod as well as Bhagatrav in the south as its outer posts in all the directions indicating cultural expansion for the time being.

CHAPTER II

Climate of the Indus Valley

The region of Western India which comprises Baluchistan, the Makran and Sind are today forbidding, barren mountains, arid deserts and sandy waste. As described by Piggott, the salt on the surface |seems to be the "Satanic mockery of the snow." And in spite of modern irrigational facilities Sind desert remains repellent and inhospitable beyond the limits of the artificial waterways.

However, Wheeler has opined that it is with all safeguard sufficiently clear that the 'rainfall in Indus Zone,' was somewhat more ample and equable in 3rd millennium B. C. than it is today as evident from the following :—

> "The millions of baked bricks of which the important cities of this culture, especially Harappa and Mohanjodaro, are built probably suggests former vast resources of local fuel other than scrub. Thus very use of the costly baked bricks in lieu of the cheap 'mud-bricks', usual in pre-historic Asia, may be supposed to reflect that there existed a climate wet enough to necessitate the more durable material."

This contention of Wheeler is further supported by Stuart Piggott, in the following words :—

> "The very fact that kiln-burnt bricks were used so lavishly in Harappan culture shows that almost unlimited timber must have been available for fuel in the third millennium B. C."

R. K. Mookerji also writes :

> "The evidence points to the development of an entire civilization which may be designated as the Indus Civilization in a region which was then more watered and wooded than now. Sind had in those early days a heavier rainfall, as indicated by the use of *kiln-burnt-bricks* for the exposed parts of its *ancient buildings, and of sun-dried bricks for its foundations* and infillings protected against the elements ; *by the seals* showing animals which were denizens of dense forests or by the elaborate drainge system of its city. It was also then watered not merely by the *Indus* but also by a second river, *the great Mihran*, which existed up to the fourteenth century A. D. These two rivers between them divided the vast volume of water from the five rivers of the Punjab and were mainly responsible for the growth of this most ancient civilization in Sind. *The region was then even exposed to floods, as pointed to by the particularly solid basements and high terraces provided for the Mohenjodaro buildings.*"

Thus we find that there is good evidence for heavy rainfall and extensive forests in the Indus Valley in ancient India, from where, the woods could be conveniently brought to Harappa, Mohenjodaro, Chanhu-daro and other important sites of this culture, which were accessible by water.

Climate of the Indus Valley

Indus seals with their vivid representations of tiger, buffalo, rhinoceros and elephant, are the work of artists to whom these marsh or jungle animals were familiar ; alternatively, the extreme scarcity of evidence for the camel is consistent with the non-desert condition besides, mere existence of great cities is indeed conditioned upon a local fertility and sound economical stability of the people which is evident by the occurrence of granary at Mohenjodaro-and Harappa during the course of exploration. Apart from the above, the well engineered plan of 'defensive arrangement' of the important cities for the protection and safeguard of the inhabitants from the devastating floods indicates probably of 'heavy rainfall' and a wet climate in the region.

However, the generally accepted view about the decay and destruction of the civilization in Sind and Baluchistan has been questioned, nevertheless it is admitted that man might have brought about the change in environment by over-cultivation and removal of forests. In this connection, Dr. Sankalia suggests that regarding the past climate of Indus Valley, it has recently been shown by Raikes, Dyson, Jr., and Fairservis that the inferences based on hydrographical, zoological, botanical, archaeological and architectural do not support the hypothesis of progressive desication either in Baluchistan or in Indus Valley. They argue that either no 'climatic change' of any major proportion has occurred. To this may be added one more argument that the houses in Sind and Bikaner continue to be built without windows, as in Mohenjodaro, which is probably to shut out heat and dust.

At the outset, nothing can definitely be concluded, although most of the scholars suggest that a certain degree of climatic change is beyond dispute, but how far it is due to natural causes and to what extent on account of human improvidence, we are still not sure of it. Sir Mortimer Wheeler, however, opines that in Algeria similar and perhaps the related problems confront the students of Rome and there is a great agreement that man rather than unaided climate has been responsible for the detrioration of civilization. Another scholar Sir A. Stein, during the course of his exploration in *Central Asia*, also faced the similar problem and observes that the evidence "distinctly pointed to the local climate having undergone a great change since Chalcolithic times in its effect upon civilization."

It is further suggested by Wheeler that some reduction in the volume of rainfall within the last 4,000 years may indeed be postulated, but there can be little doubt that human neglect or interference was important contributory factor in this context. Some of the factors which may probably be responsible for the climatic change enumerated as under :—

(*a*) excessive deforestation possibly affected in part by the Indus brickmakers,

(*b*) inadequate maintenance of such dams and irrigation-channels as may have been found necessary, and

(*c*) falling off agricultural standard,

are all familiar economic and social factors which would result in the reduction of the precipitation of the moisture, and if we add to it domestic potentials likelihood of ultimate invasion by uncivilized nomads (Aryans of 2nd millennium B. C.) and consequent break up of organised agriculture, we may safely blame human agency as major element in the problem. Even 'salt incrustation' is attributed at least in part to human action.

The present aridity may have been induced wholly or partly by northward movement of Atlantic cyclones on the hypothesis that they were at one time deflected southward to the latitude of Northern Africa and extended to Arbia, Persia and India or it might be that south-western monsoon then touched the Indus Valley.

The presence of ruined dams or Gabarbands, in the vicinity of South Baluch Chalcolithic sites suggests the likelihood of significant association and since these dams are numerous stone built up to 8 feet wide and 300 yards or more in length, they represent a sustained attempt to restrain and pond back seasonal drainage, implying on one hand that 'rainfall' was somewhat more abundant there than today and secondly, sufficiently precarious to necessitate careful hoarding and control. Sir A. Stein thus remarks, these must reflect not only the climatic condition with greater rainfall but also a large population to provide labour for construction of such dams, which were clearly designed to irrigate the fields.

In summary, it is at least evident that basic climatic change is unlikely to have been the sole or even main cause in deterioration of agricultural condition of Indus Valley. However, it has been suggested by most of the scholars on the basis of certain convincing evidence that the climate of the Indus Valley, was probably somewhat different than it is today.

CHAPTER III

Copper Hoard of the Ganga Valley

Smith's statement that 'there was no Copper Age' in India, is not now acceptable since a large number of tools and weapons and other copper objects have been found at various sites which obviously show that there was a time when copper was used in India along with other materials. From the Vedic literature we infer that during 'Later Vedic Age', the focus of culture was somewhere in Gangetic Valley. The famous series of 'copper hoards' have been found on upwards of 34 sites between the upper Ganges and Orissa. Something like 600 objects are involved comprising 'Eight main types'.

Find spot and its distribution.—These hoards were found in several localities and they are new preserved in various museums. The sites of these hoards are mostly confined to Ganges Valley but objects of this have been found in Bihar, Bengal, Orissa, Madhya Pradesh and as far south as Kallur in Hyderabad. The undermentioned 'Copper hoards sites' have so far been discovered in the entire area of this culture :—

(1) *Uttar Pradesh.*—Rajpur Parsu in Bijnor district which covers an area of about 4 furlongs, Bisauli in Budaun district, both these sites were explored by Sri B. B. Lal. The other find spots are Bahadrabad (8 miles west of Haridwar), Sarthauli and Sheorajpur.

(2) *Outside Uttar Pradesh.*—(a) Pondi and Gangeria in Madhya Pradesh, (b) Kallur in Hyderabad in Raichur district, (c) Hami, Bargunda and Kaushaya in Bihar, (d) Tamajuri in West Bengal, (e) Dunria and Bhagrapir in Orissa.

Thus it may be seen that this copper hoards culture spreads over a considerably large area in Northern, Eastern, Central and a part of Southern India. In other words its extent is no less than that of 'Harappan Culture'.

Objects found in these Copper Hoards

These may be categorised as under :—

(1) *Flat Celts.*—They have been found also at Harappa and Mohenjo-daro and recently four sherds of copper have been unearthed at Jorwe.

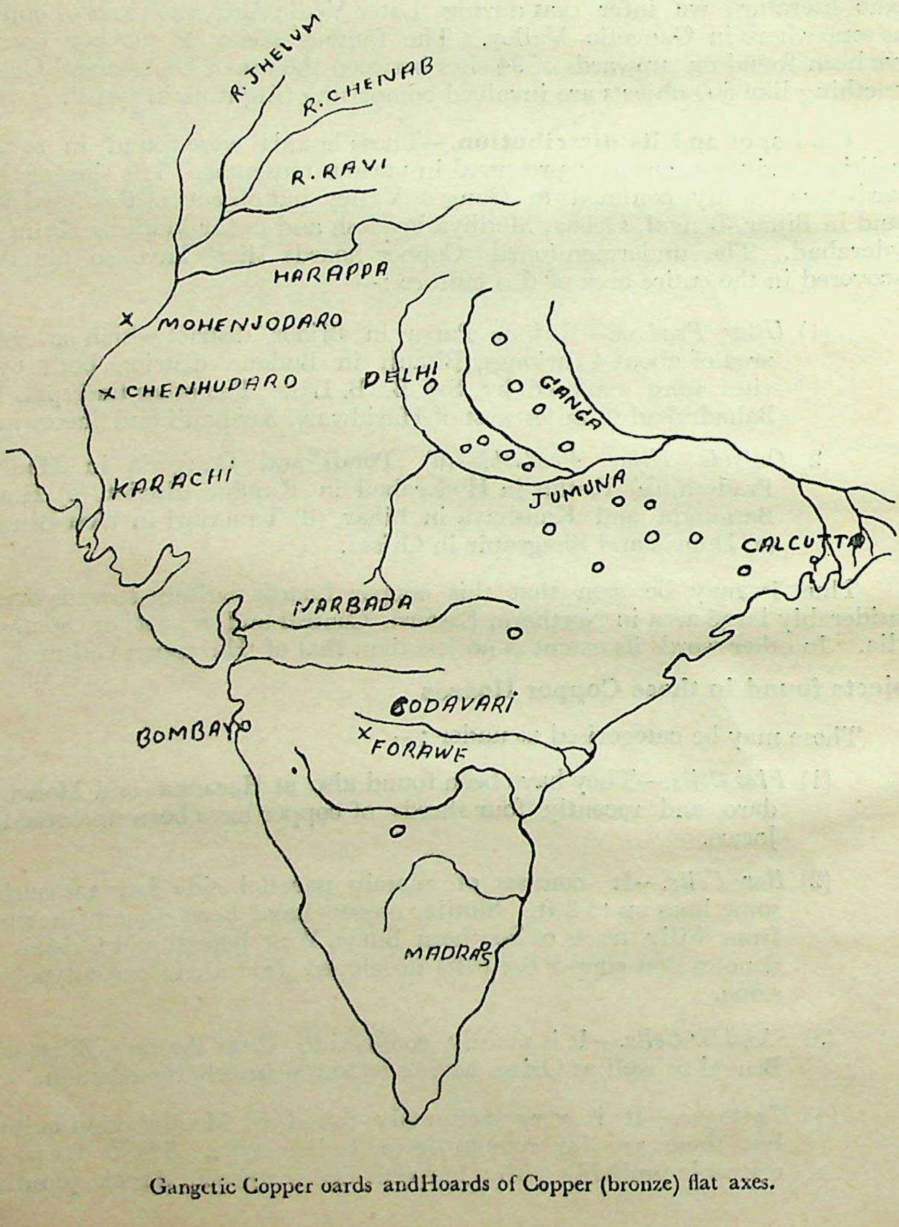
(2) *Bar Celts.*—It consists of merely parallel side bar measuring sometimes up to 2 ft. Similar objects have been found in stone from hilly tracts of Southern Bihar, West Bengal and Orissa. It denotes that copper bar celts developed from their 'prototype' in stone.

(3) *Shoulder Celts.*—It is mainly confined to Uttar Pradesh, Bihar and Bengal as well as Orissa having its south-earterly distribution.

(4) *Harpoons.*—It is very commonly found in Magdalenian culture but these are far remote from Indian type. These harpoons resemble probably with a harpoon like weapon in a rock painting

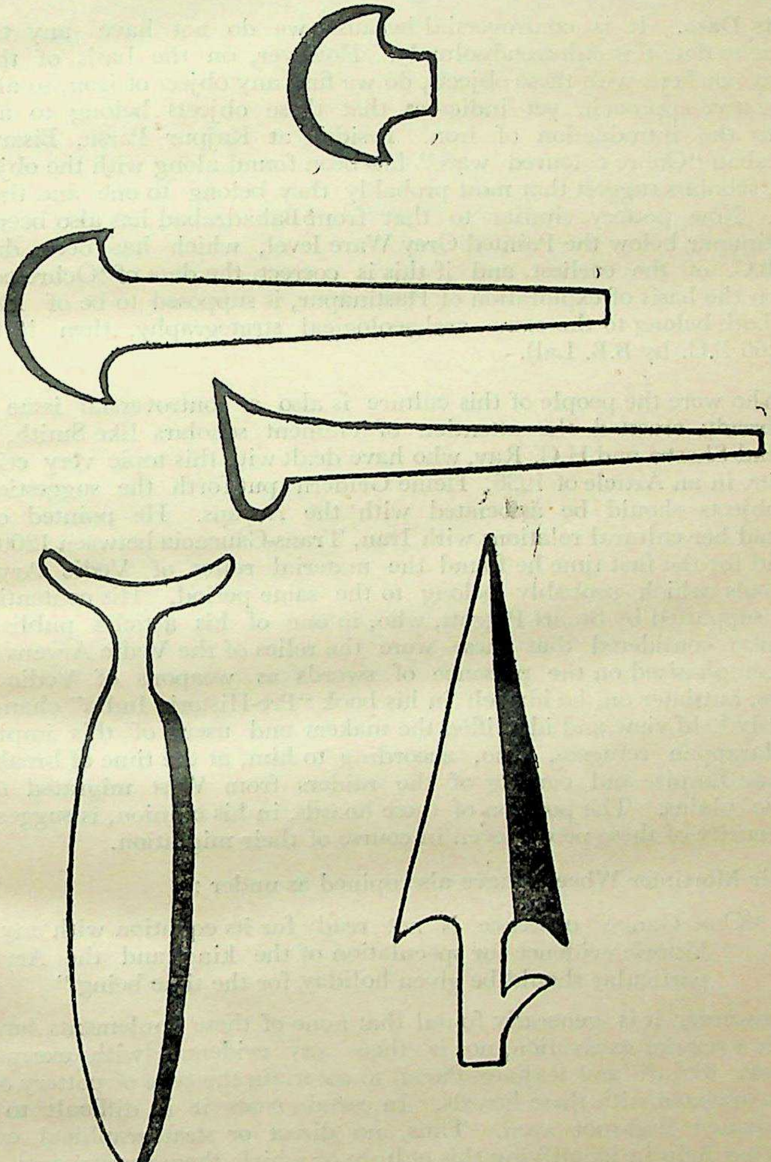
of pre-historic period, where hunters are attacking rhinoceros with the same, which resembles harpoons of this hoard. Heine Geldern has established its relation with harpoon arrow head of Western Asia, but they principally differ from Indian harpoons.

(5) *Rings.*—Some scholars have taken these rings to be similar types as Irish gold ring and silver ring money, but does not suit well in case of Indian rings.


R. JHELUM
R. CHENAB
R. RAVI
HARAPPA
MOHENJODARO
DELHI
GANGA
CHENHUDARO
KARACHI
JUMUNA
CALCUTTA
NARBADA
GODAVARI
BOMBAY
FORAWE
MADRAS

Gangetic Copper oards and Hoards of Copper (bronze) flat axes.

(6) *Antennae Swords.*—It is characterised by a hilt which is bifurcated like the antennae of an insect. Outside Gangetic Basin, it occurs only at Kallwi. Some scholars tried to connect this sword of 'Koban culture', of Caucacia, but in Caucacian type the 'hilt



Gangetic copper hoards, and hoards of copper flat axes.

Note —Flat axes have been found at Harppa, Mohenjodaro, Chanhu-daro, Jorwe and Gangetic basin.

and blade', of the sword are two separate parts, whereas the Indian type is one piece. Further Caucacian hilt has a hole and is flat but these features are absent in Indian one.

(7) *Anthropomorphic Figures.*—These are confined to Gangetic Valley only. These figures seem to have some ritualistic significance.

Its Date. It is controversial because we do not have any tangible evidence to date this culture absolutely. However, on the basis of the very fact that nowhere with these objects, do we find any object of iron, so although it is negative approach, yet indicates that these objects belong to a phase prior to the introduction of iron. Besides at Rajpur Parsu, Bisauli and Bahadrabad "Ochre coloured ware" has been found along with the objects of hoards, scholars suggest that most probably they belong to one and the same period. Now pottery similar to that from Bahadrabad has also been found at Hastinapur below the Painted Grey Ware level, which has been dated to 1100 B.C. of the earliest and if this is correct, the date of 'Ochre coloured ware' on the basis of exploration of Hastinapur, is supposed to be of 1200 B.C. and if both belong to the same archaeological strategraphy, then 1200 B.C. (Pre-1200 B.C. by B.B. Lal).

Who were the people of this culture is also a controversial issue which had already arrested the attention of eminent scholars like Smith, Brown, Hiranand Shastri and H.C. Ray, who have dealt with this topic very critically. However, in an Article of 1936, Heine Geldern put forth the suggestion that these objects should be associated with the Aryans. He pointed out that India had her cultural relations with Iran, Trans-Caucacia between 1200—1000 B.C. and for the first time he found the material relics of Vedic Aryans in these tools which probably belong to the same period. His contention was further supported by Stuart Piggott, who, in one of his articles published in 1944, also considered that these were the relics of the Vedic Aryans and he further emphasized on the presence of swords as weapons of Vedic Aryan invaders, but later on, he himself in his book "Pre-Historic India" changed the previously held view and identified the makers and users of this implements with Harappan refugees, who, according to him, at the time of break of the Harappan Empire and coming of the raiders from West migrated towards Gangetic plains. The position of these hoards, in his opinion, is suggestive of the insecurity of these people even in course of their migration.

Sir Mortimer Wheeler have also opined as under :

> "Our Ganges evidence is not ready for its equation with any major historic evidence for speculation of the king and the Aryans in particular should be given holiday for the time being."

However, it is generally found that none of these implements have been found in a regular excavation, nor is there any evidence (with exception of that from Bisauli and Rajpur Parsu) to ascertain the type of pottery or other objects associated with these hoards. In certain cases it is difficult to locate the excavated find-spot even. Thus, no direct or strategraphical evidence come to our help in identifying this culture of which these implements form a constituent. Nevertheless, according to Wheeler the general inference is that "the hoards represent semi-nomadic food gathering communities, capable of cleaning patches of jungles and perhaps of some sort of garden agriculture, but living mainly by hunting and fishing."

In the light of the above evidences and opinion advocated by the scholars we are not in a position to ascertain whether the people or "Copper hoard culture" were Harappan refugees or Vedic Aryans.

In the end, we can say in the words of Wheeler :

"For the Ganges has given us our faith, whereas the Indus has given to India its name."

CHAPTER IV

Painted Grey Ware

Since all the cultural objects are dominated by the peculiar grey colour pottery met with, in all the excavated and explored sites, it has been aptly called by the scholars as 'Painted Grey Ware' culture. But apart from the type of pottery, we also find traces of the houses, tools, terracotta figurines, beads, iron articles and also stone objects in this culture.

Find-Spot and its Distribution

In 1955 a list of 34 Painted Grey Ware was published and the number is constantly increasing. Though this ware is characteristic of the 'Jamuna-Ganges Doab' but occurs as far west as Bikaner and as far south as Ujjain Among the find-spots of this culture are :

> *Ahichchatra* (where the pottery was found for the first time) below the N. B. P. ware, Baghpat and Hastinapur (in Meerut District), Indraprastha (the ancient mound on which stands the old fort at Delhi), Kampil, Palwal, Kurukshetra, Bahadurgarh (in Rohtak), Mathura, Panipat, Raja-ka-Quila, Sravasti, Kausambi and Rupar (in Ambala District). Besides, occasional sherds of Painted Gray Ware have been found in Rajasthan, Madhya Pradesh and Bihar (Vaishali in east and towards north up to Madhopur, (15 miles south-west of Jullunder). This far-flung places show the distribution or contact with the Grey Ware people over Punjab, Rajputana, Malwa, Eastern Uttar Pradesh and Bihar.

Chief characteristics of Painted Grey Ware pottery :

(*a*) Its pottery is very distinctive in its fabrics, forms and its painting over a 'Slate Grey Surfaces'.

(*b*) It has generally a 'fine fabric' characterized by well levigated caye very compact and walled and fully baked, course varieties lar also known.

(*c*) The colour, which is almost identical on both the sides varies from ashy to dark grey.

(*d*) The main shapes consist of bowls and dishes with straight, convex, carninated, tapering and outgoing ledged or corrugated side and with round base. However, vessels are largly wheel made, though occasional hand-made pottery is available.

(*e*) *Painting.*—The pots were generally painted with black colour, but at times in chocolate or reddish brown. A unique specimen is

---

"तं देव निर्मितं देशं ब्रह्मावर्त्तं प्रचक्षते"— *Manu*

"अम्बितमे नदीतमे देवितमे सरस्वति ।
आ प्रशस्ता इव स्मसि प्रशस्तिम्ब नस्कृधि ।"—(*Rig Veda*)

'Bichrome' having the design in reddish-brown and cream. Painting was done when the pots were "leather hard", sufficiently dry and before firing.

(*f*) *Designs*.—Painted designs include the following :—

(*i*) simple horizontal band round the rim both outside and inside ;
(*ii*) groups of verticle/oblique or criss-cross lines usually on outside ;
(*iii*) rows of dots or dashes, chain of small spirals ;
(*iv*) concentric circles or semi-circles ;
(*v*) sigmas of Swastikas either on outside or interior of the base ;
(*vi*) rows of scalloped pattern, imitating a "risingsun" ;
(*vii*) rows of circular wavy lines.

Its Date.—The excavations of Hastinapur and Rupar have helped us in fixing the date of Painted Grey Ware culture. At Hastinapur painted grey ware has been found in the lower stratum with a gap in between them. And at Rupar, 'Harappan Ware' was found in the lower stratum, while the painted grey ware in the upper one as shown below :

At Rupar	**At Hastinapur**
Painted Grey Ware	Northern Black Polished
* * * *	* * * *
Gap	Gap
* * * *	* * * *
Harappan Ware	Painted Grey Ware Culture

From the above strategraphical distribution we may conclude that 'Painted Grey Ware' culture comes in between the end of Harappan culture and beginning of Northern Black Polished Ware culture. Since the date of Northern Black Polished Ware culture has been fixed between 600 B. C.—200 B. C. the excavator at Hastinapur, Sri B. B. Lal, is inclined to fix the date of Painted Grey Ware, as 1100—800 B. C. However, in the opinion of Sri Mortimer Wheeler brings the date too late, because it is established fact that during 600 B. C. Northern Black Polished culture was already in existence. Further F. E. Pargiter suggests an approximate date of 950 B.C. on the basis *Mahabharata* War.

Whether Chalcolithic ?

Undoubtedly the Painted Grey Ware culture holds a significant position by being placed between the Harappan and the Northern Black Polished culture, by its specialized distribution pattern within the Ganges Valley, its association with the traditional *Mahabharata* sites and its likely affinity with similar pottery of Shahitump (both in fabric and design particularly the

Swastika), still with all the potentialities, we know little about the people who introduced the pottery and to quote Dr. Sankalia "Nothing is done so far to fill up this vacuum."

Copper tools have been unearthed from the Painted Grey Ware sites. While excavating at Hastinapur, Sri B. B. Lal found a few '*iron slags*' in the upper layers, but it was probably thought to be the result of some intrusion and Painted Grey Ware was considered to be chalcolithic one. Subsequently at Alamgirpur, Atranji-Khera and Sravasti sufficient iron articles have been found indicating that although it was not in common use, yet the iron was known to Painted Grey Ware people. Therefore, he places this culture in Iron Age. Even the stone industry which accompany after the use of copper in India seems to be absent from Painted Grey Ware levels. In these circumstances it is not safe to call it as a solely chalcolithic culture. For the present Wheeler, however, further suggests that sudden emergence of high class Painted Grey Ware fabric in the Ganges basin suggests that its technique had already been perfected elsewhere. If Aryan be dragged into this picture, as opined by Wheeler, it may be possible to suppose it represents the second phase of their invasion, when from Punjab they entered and Aryanised the middle country of the 'Ganga-Yamuna Doab' after picking up ideas and craftsmanship from Indus Valley and Baluch border.

This theory gets further support from some scholars who suggest that "author of Painted Grey Ware culture were Aryans" who came to India in 1500 B. C. and since they came from outside in different groups, it may have taken some centuries in migration and settlement from one place to another and hence the date of Painted Grey Ware people (1100 B. C.) does not go against this identification. Further, we do not know any other culture in Harappan and Painted Grey Ware cultures. We also know if we agree with Wheeler followed by Stuart Piggott that Aryans were responsible for the destruction of the Harappan culture or in other words they were the successors of Harappan people. In view of the above fact, there appears no positive hindrance in identifying the Painted Grey Ware people with Aryans. Most probably it is the Painted Grey Ware culture which represents Vedic civilization. Although the Aryans have been variously identified with "Cemetery H., People, Copper Hoard culture and Painted Grey Ware culture, but none except the Painted Grey Ware culture has got the majority of evidence.

"Sri B. B. Lal has opined that the Grey Ware people might be a group of Aryans or the *Mahabharata* people."

CHAPTER V

Lothal

Lothal is the site near the village Saragwala in Dholka taluka of Ahmedabad district in Saurashtra. A conjecture has been hazarded that in ancient times the site might have been on the confluence of rivers Bhogava and Sabarmati, which is now removed to a distance of nearly two miles to the south-west of Lothal. After the partition of the country in 1947, two important sites of Harappan culture fell in Pakistan, which, of course was an 'irreparable loss to Indian Archaeology'. But as a result of further excavations and explorations, a large number of Harappan sites have now been discovered. Out of them Lothal, discovered in 1954, is undoubtedly the most important site. In fact, it has been suggested by its excavator Sri S. R. Rao on the basis of its antiquities as "miniature Harappa" and by other scholars as "miniature Mohenjodaro".

Town Planning.—The excavations at this site have revealed that town though small, some two miles in circumference with a rampart encircling main habitation, a cemetery in the north-west corner and a unique large brick built enclosure, which might be a "dock-yard", the first of its kind unearthed in India or anywhere else. Lothal exhibits the characteristic features of the twin-metropolis and something new in addition.

Town, thus, was divided into 'six blocks' each built on an extensive mud-brick platform of a varying height. So far four streets (two from north to south and other two from east to west) with two side lanes have emerged from excavations. On one side of a street lies a row of 12 houses ; smaller houses on either sides of another street are believed to be shops, each with two or three rooms, with different dimensions 12 ft. × 9 ft. to 8 ft. × 6 ft. A few large houses measured 72 ft. × 42 ft. Some had verandah in front, while others had central courtyard with rooms around. The houses of artisans like copper-smiths and bead-makers were small and made of mud bricks. Only those rooms were paved with burnt bricks and finished with bitumen, where the water was to be used for purpose of cleaning, etc.

Sanitary System.—The town had, as usual, a fine system of sanitation which included a public drain, internal drainage which was joined with the main road, bitumen paved bathrooms and lavatories with a soak pit behind. Beside, the drains were stepped in order to reduce the force of water and thus save a passer-by from his clothes being blotted. The most interesting is a very "elaborate drainage" in a large house in the south block built over a terrace platform coupled with a separate well might have belonged to some important person or might be a public house. The presence of "socket holes" indicates that probably there was specific "door-like" provision in the drain walls, for clearance of drains. The bricks of the drains were joined very carefully and neatly.

Kiln or Granary.—One structure of 165 ft. × 145 ft. consisting of 12 blocks in four rows, has been identified by the excavator as a kiln. This he infers from the fact that more than 70 sealings have been found in the channels dividing these blocks. Wheeler, however, considers this to be a granary. It is difficult to be precise about its function.

Pottery, Ornaments, Toys and Instruments.—As suggested before, Lothal is a replica of a true Harappan town. The townfolk enjoyed the same prosperity as witnessed at Mohenjodaro, for instance, fine, well-made, study pottery, recalling in shape, designs, fabric and even in the levigation of clay the now famous Indus Pottery. But in addition to the beakers, goblets, troughs, dishes on stand, some vessels with flaring sides, perforated jars and lamp in "thick-red or buff ware", there is a "black and red" or cream ware which is throughout contemporary with usual ware. While this ware is different in technique of manufacture, it shows no new forms. Some of the Harappan forms are copied in it. However, a few new ceramic forms are visible in Period II. These new forms include :—

(*a*) bowls with little blunt carinated shoulder, and a simple dish without carination on squattish stand ;

(*b*) goblets, beakers and perforated jars are absent ;

(*c*) some designs such as snakes, very realistically drawn stags and ducks, are new.

Dr. Sankalia suggests that if these and others also occur in Period I, then Lothal should be regarded as not mature or true Harappan but as Wheeler calls it a "sub-Indus" variety.

Ornaments of various materials like shell, ivory, steatite, faience, terracotta, semi-precious stones (agate and carnelian), copper and gold, beautifully polished weights, gamesmen, figurine in terracotta and copper, once again testify to the artistic skill of the Indus-Saurashtra craftsmen.

There is also a small copper dog, which though encrusted, has a beautiful expression. A very few objects found recently advance our knowledge of this civilization. Gamesmen with heads of a ram and ox are indeed interesting in themselves. These gamesmen might belong to game of chess. A game board for such a game has been recovered from the royal graves of Ur. The occurrence of a terracotta figure of horse or horse like animal is very much significant. Dr. Sankalia points out that if it was found from the mature Harappan deposits of Period I (as suggested by Rao), then all the arguments regarding the authorship of the civilization will have to be revised, unless, of course, the animal is not a horse, but 'Onigae'.

Instrument.—Well aligned street and houses indicate that some precious instruments like a foot-rule, and a compass must have been used. Fortunately, a small measuring rod of "ivory" about 7 inches graduated along the copper margin has been found. A peculiar object like yoni, but identical in shape on all the four sides, may be compass for measuring angles. Other important tools is twisted copper or bronze drill. Its occurrence at so early date is of great moment in the history of civilization.

Dock-yard.—Lothal has yielded a huge structure of burnt brick on the east of the town, almost rectangular about 710ft. × 120 ft. with the extant height of 14 ft. by the side of a mud-brick rampart assigned to Phase II, Period I. Within this structure five stone rings have been found and identified with arch or stones. Its largeness, arch or stones and salty-soil within the structure suggests that it was a 'dock-yard". There is a large opening about 23 ft. wide in the wall on the eastern side. This is believed to be the "inlet channel whereas in the south, there is smaller opening called "spill channel", which might have been for regulating the outflow of water by the insertion of a wooden door in the grooves provided at the mouth. The occurrence of this dock-yard is unique of its type. The discovery of dock-yard now leaves no rooms for doubt that Harappan people established maritime contact with other contemporary countries. Probably Harappan objects unearthed at Mesopotamia might have been exported from Lothal.

Thus Lothal not only represents the typical Harappan site but also contains some evidences showing its contact with other cultures, which is very significant from historical point of view.

Cemetery (Burial system). The discovery of the cemetery in the south, on the lower part of the mound, confirms once again our view regarding method of disposal practised by Harappan people. Till early 1960, some 17 graves (or burials) have been found. Stratigraphically these are assignable to the closing Phase of Period I and the whole of Period II. The method of burial was quite simple a fairly large pit was dug and body was put in north-south direction with the head to north, placed on slightly raised ground and face in some cases turned to east, exceptionally east-west ; but in one case (Phase III, Period I), the pit was lined with mud bricks, which suggests that shrouds, coffins or built-in chest-like contrivances were probably in vogue. At this stage it may be pointed out even at Harappa, Wheeler found the traces of a "wooden coffin" and the bodies covered by a reed shroud (Burial No. 5 in cemetery Rs. 37 found in 1946). In 1955-56 three instances of "Earthen pots" containing crushed bones, some pottery and carnelian bead were noticed at two places, in the excavation. It is difficult to say whether these are examples of Urn-burials and if so of children who were very often buried in pots right in the houses.

Normally each pit contained one skeleton, but in three cases (all of Phase III) two bodies were placed side by side. This double bodies (twin burials) in the burials have created some confusion regarding conception of "Sati" in Harappan culture. But Shri Rao thinks that it is not the case of 'Sati' practices ; these three 'Twin burials" were devoid of any grave goods, because of shortage of space, but single graves were crowded with a number of pots. Anthropological studies reveal that both the bodies are male.

Its Contribution. Although Lothal has yielded most of the typical Harappan elements, but simultaneously certain evidences which are unknown from other sites and thus increases our knowledge in ascertaining conclusion about Harappan culture, to be more precise, Lothal excavation has resulted in ascertaining the end of the Harappan culture which goes down a few centuries after 1500 B. C., generally accepted date of the end of the two metropolitan cities. It has thus minimized the gap between the end of Harappan culture and beginning of historic culture.

Besides excavation at this site also for the first time, discovered the link between the Harappan and the Central India Chalcolithic cultures, thus provided the channels through which the heritage of Harappans passed on to the latter generations the impact of which on modern Hinduism and Indian culture in general is immense.

Dating. The material date and other aspects suggest that it witnessed two main periods :

(a) *Period I*—having 4 sub-phases and dated between 2500 B. C. to 1500 B. C. and regarded as manifestation of mature Harappan civilization.

(b) *Period II*—it is assigned to 1500—1400 B. C. characterizing the decadence of Harappan culture.

The Carbon 14—dates however suggest that the end of Harappan culture at Lothal was in about 1700 B. C.

Thus Lothal not only represents the typical Harappan site but also contains some evidences showing its contact with other cultures, which is very important from historical point of view.

CHAPTER VI

Pottery of Harappan Culture

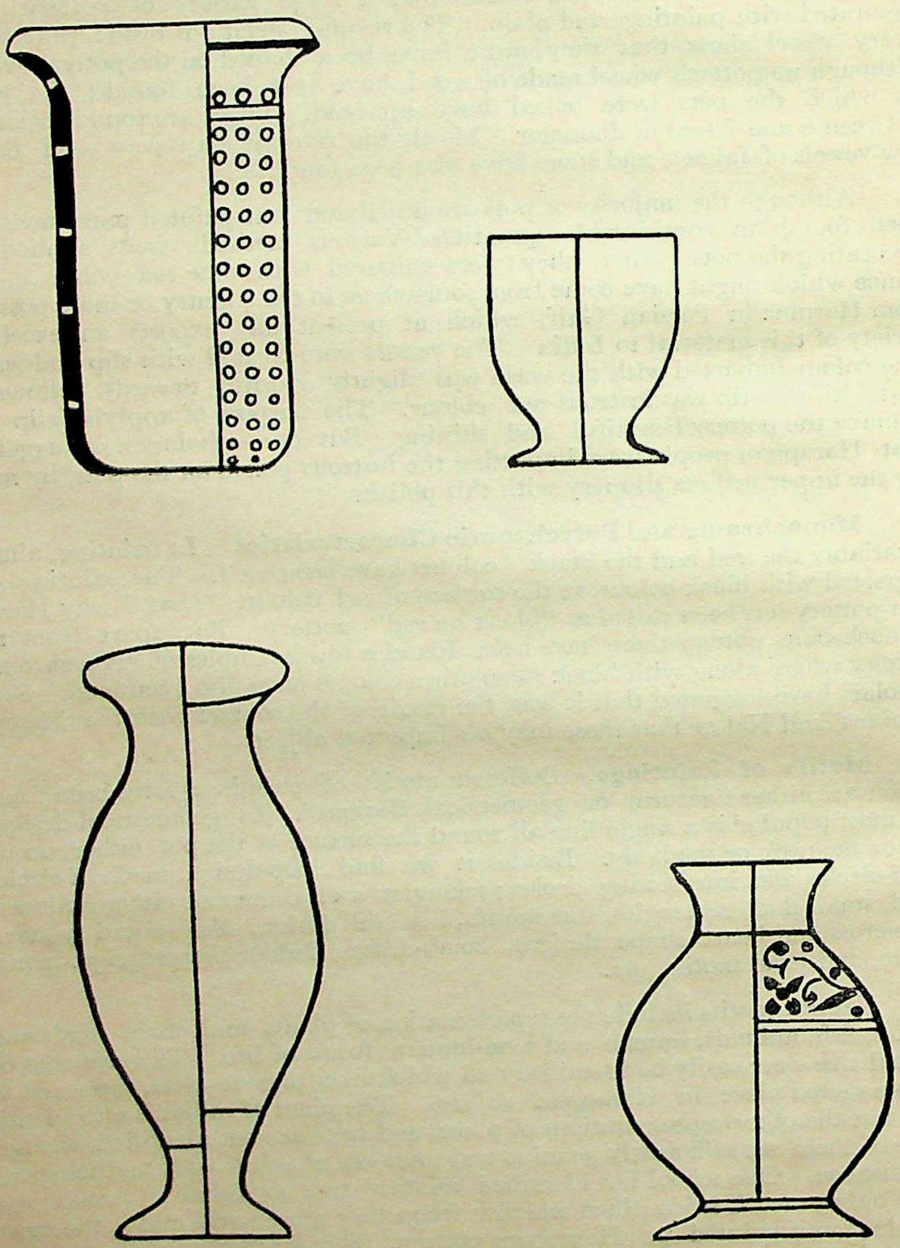
The people of Harappan culture had a large variety of pottery, both decorated with paintings and plain. The regular striations inside practically every vessel show that they must have been shaped on the potter's wheel, although no potter's wheel made of wood, have yet been found ; the kilns, in which the pots were baked have survived. They are round structures between 6 and 7 feet in diameter. Mostly the riverine clay was used but a few vessels of faience and stone have also been found.

Although the majority of pots are unpainted but painted pots have also been found in considerable quantity. Various methods were applied in decorating the pots. First, they were coloured with some red ochre a substance which might have come from somewhere in the country or more possibly from Hormuz in Persian Gulf, which at present day exports an excellent variety of this material to India. The vessels were treated with slip and wash. The colour imparted with the wash was slightly reddish towards yellowness that with the slip was lustrous red colour. The purpose of applying slip was to make the pottery beautiful and shining. But one scholar has suggested that Harappan people were imparting the lustrous polish on the pots, by making the upper surface slippery with this polish.

Monochrome and Polychromic Characteristics. In painting, almost invariably the 'red and the black' colours have been used. The painting was imparted with black colour on the surface of red colour. That is why Harappan pottery has been called as "black on red" pottery. But apart from this monochrome pottery there have been found a few examples of "Polychrome" pottery where along with black some other colours have also been used. Some scholars have suggested that it was the result of the contact with the 'Mesopotamians' and Nal or that these may be imported objects.

Motifs of Paintings. Defferent motifs of paintings have been found which are either "natural or geometrical designs". In geometrical designs, the most popular is a single line all round the surface of the pot either on the top or the neck or the body. Besides it we find loop-design, made of circles, semi-circles and intersecting circles ; triangles and diamonds either hollow or solid, small dots, rectangles, star motifs, fish seal design, chess-board pattern, criss-cross and heart shape designs, comb-design, ladder shape design. hemisphere, and head motifs, etc.

Natural motifs include the representation of plants and trees, birds and snakes, fish, animals, human and semi-human forms of life. The branches of Peepal tree cane easily be identified and which like present time, appears to have a sacred place in Harappan culture. The plant of millet is also identified, but the other representations of plants and trees are not identified, though some of them are sufficiently genuine and some are attached with mythological significance. One school has identified another tree as "Sami". Among the birds only peacock is identified which is frequently represented and is the most popular motif painted on Harappan pottery. Some other representations of the birds are quite conventional. In some cases bull and in one case the does is represented, others are not well represented. In "Rangpur and Lothal" were found the 'fish pattern of designs' and on few pots, some curved line, sometimes resembling a snake. Although human figures are quite rare, yet one very interesting specimen has been found in which a man is carrying fishing nets suspended from a pole across his shoulders. Some human figures have been assembled with different limbs of different animals, which according to some scholars represent the religious effects on the Painting.



Pottery from Harappa, late phase of the Indus Civilization.

Firing. Mostly the pots of Harappan culture were painted before firing due to which the painting has become part and parcel of the pot. A few exceptions in post-firing painted sherds have also been found of which the painting is damaged and removed easily. Firing was done under oxidizing conditions in open kiln where air was passing. This method resulted in making the pots of reddish colour. Firing in closed kiln was also done.

Shape and size. Different shapes have been found in Harappan pottery. These are cups, dishes, jars of different sizes, goblets, beaker, dish on stand and perforated jars. Some perforated jars have been discovered with the deads. It appears that children were buried in the earth. Some of these perforatory jars have been found intact. We are not sure of the specific purpose, although some scholars suggest that these were probably used as 'heater' ; some advocated that lamp was kept inside the jar and it was kept on the crossing, while other have advanced their views that some incense were burnt in them and ladies were taking fragrance to their hairs or it might have been surviving something with the Vedic rituals, where water was poured through many channels.

No considerable change in shape, technique, painting or design is detected in Harappan pottery and as such it is very difficult to demarcate the pottery of early, middle and the latter phases of this culture. It appears from the examination of their pottery that Harappans once adopted a shape and technique they continued it. Yet the painted pottery is more frequent in the earlier than in the later phases. Goblets belong to the later period as it is confined only to upper layers.

In spite of some resemblance with the Baluchistan paintings, Harappan pottery' has its individuality and simultaneously it helps more in isolating Harappan culture than in associating with the other cultures. In compendium Harappan pottery is for the most part plain, mass produced wares for purely utilization purposes, peculiar in its type to the Harappa Kingdom itself.

> "The most popular design is composed of a series of intersecting circles, a pattern which does not appear on the wares of any other ancient civilization and which, it must be confessed, is somewhat bewildering to the eye, when it forms the only decorations on a Jar."—*Mackay*.

Thus, Indus Civilization probably a little before 2500 B. C., had produced a wonderful pottery, modified from region to region and age to age, was by 300 B. C. of good quality, wheel-turned and well baked, often thin and attractively painted with geometrical or semi-realistic motifs which revealed both their individuality and their cultural kinship with the societies of the great plateau behind them.

CHAPTER VII

Northern Black-Polished Ware

Many sites in northern, north-west and central India, occasionally as far south as Amaravati, have produced this Iron Age Ware, which is as distinctive in the subcontinent as is terra-sigillata on European sites.

Method of making a Pottery. It has been thought that, after being turned on the wheel, the pots were subjected to elaborate burnishing, and then coated with a finely levigated, highly ferruginous clay, and again burnished, and that they were then fired under reducing conditions to a temperature producing an incipient fusion of the slip, this accounting for their exceptional hardness and lustre. Its surface is highly brightish than the other pottery.

The pottery is well levigated and is white to reddish. It is wheel-made and normally thin with a highly lustrous surface ranging from grey or brown to black, and steel like in qualiiy.

Shapes of the Pottery. The shapes are commonly bowls are convex sided dishes, plates, as indeed has the high quality of the fabric to the P. G. pottery. Dr. Wheeler says that "the pot-makers have followed a variant type of technique (best type of technique) than the P. G. pottery". We find that the technique of the new pottery was followed by the potters of the Ganges basin, where the ware is particularly abundant. This Ganges basin has given a new life to this pottery, where with the iron fragments, it has been found abundantly.

Dr. Wheeler says that "it may reflect the liking of the Persians for a high metllic polish, as represented very notably in some of their masonry."

Find-Spots of the Pottery. The find-spots are mentioned in the following order :—

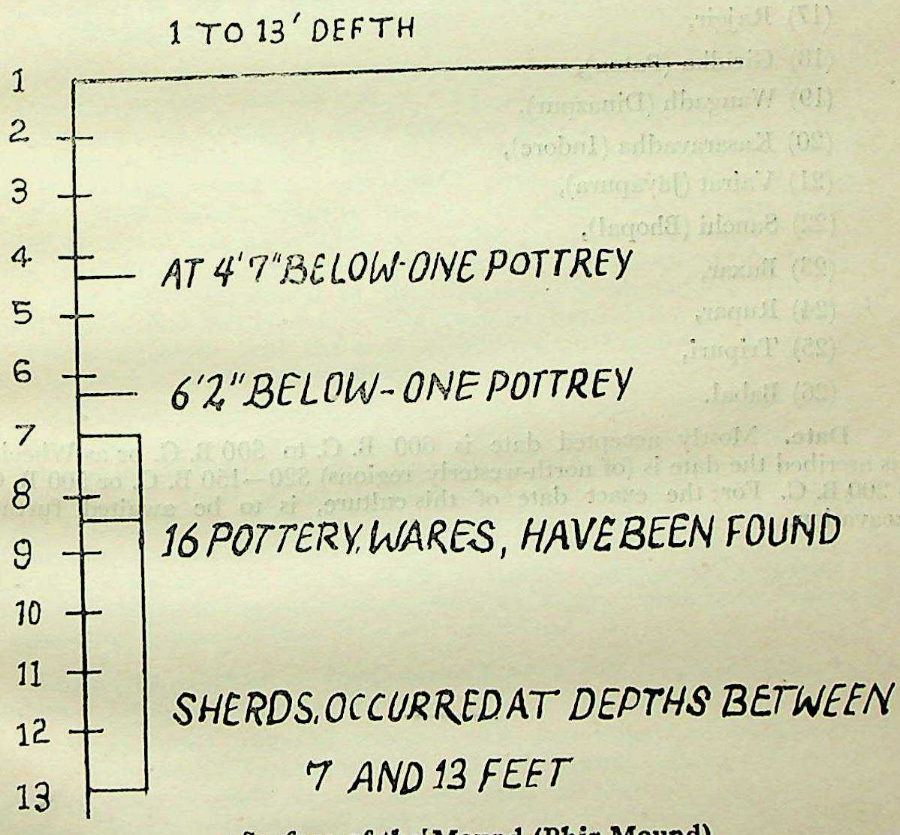
(1) Ganges basin, where a new technique and abundantly has been found.

(2) Taxila in the Punjab (West Pakistan), where yielded about twenty sherds. Of these eighteen came from the earliest of the successive sites of the town, Bhir Mound, which was founded late in the 6th or early in the 5th century B. C. and is thought to have ended about 180 B. C. It is noteworthy that sixteen of the Bhir Mound sherds occurred at depths between 7 and 13 feet, only two being higher than 7 feet. (one at 4 feet 10 inches, and one at 6 ft. 2 inches), and the remaining two sherds have been found at Sirkap (in Taxila) at 18 feet below the surface and should therefore be early in the history of that site, that is to say, in the first half of the 2nd century B. C. Wheeler on the basis of this showing, has ascribed the date of this ware to the 5th-2nd centuries B. C.

(3) At Shishupalgarh in Orissa three northern black pottery sherds occurred above rouletted ware. Dr. Wheeler has suggested that "it is not likely to be earlier than the beginning of the 1st century A. D."

(4) Charsada near Peshawar, in the far north-west side, where a dozen stratified sherds of this fabric were found in 1958.

(5) At Udegram in Swat, where Professor G. Tucci's expedition has found a sherd in a milue attributed to the 3rd century B. C. Dr. Wheeler has suggested that "even at Taxila itself, it arrival should mostly be equated with the spread of the Mauryan dominion from the Ganges to these parts after 323 B. C, In other words, I would provisionally ascribe the northern black pottery ware of the north-westerly regions of the sub-continent to the period 320-150 B. C., without prejudice to the possibility of an appreciably earlier beginning in the Ganges basin itself".


1 TO 13' DEFTH
1
2
3
4
AT 4' 7" BELOW-ONE POTTREY
5
6
6' 2" BELOW-ONE POTTREY
7
8
16 POTTERY. WARES, HAVE BEEN FOUND
9
10
11
SHERDS. OCCURRED AT DEPTHS BETWEEN
7 AND 13 FEET
12
13

Surface of the Mound (Bhir Mound)

(6) At Hastinapur, in the Ganges Valley over in Period III were found a hundred sherds, but in the succeeding Period IV, which produced Mathura coins, ascribed to the 2nd century B. C. the ware was absent.

Dr. Wheeler has suggested that "At first this ware was flourished in the Ganges basin', later on came into prominance from other sides".

(7) Ahichhatra ;

(8) Mathura,
(9) Kaushambi,
(10) Bhita,
(11) Jhunsi (Prayaga),
(12) Masao (Ghazipur),
(13) Atranjikhera (Etah),
(14) Sarnath,
(15) Rajghat,
(16) Patna,
(17) Rajgir,
(18) Giridka (Patna),
(19) Wangadh (Dinazpur),
(20) Kasaravadha (Indore),
(21) Vairat (Jayapura),
(22) Sanchi (Bhopal),
(23) Buxar,
(24) Rupar,
(25) Tripuri,
(26) Babal.

Date. Mostly accepted date is 600 B. C. to 300 B. C. or as Wheeler has ascribed the date is (of north-westerly regions) 320—150 B. C. or 500 B. C. to 200 B. C. For the exact date of this culture, is to be awaited further excavation.

CHAPTER VIII

AMRI-NAL CULTURES

In 1925, Hargreaves explored a large mound at Nal, in the Kalat State of Northern Baluchistan and found there evidences of a culture the connection of which with that of Harappan people has yet to be determined. Two years later, Sir Aurel Stein travelled through Northern and Southern Baluchistan to ascertain whether the Harappan culture had penetrated to those regions and, in the course of two arduous campaigns, was rewarded by the discovery of abundance of objects similar to the Harappan remains at Periano Ghundai, Sutkagendor, Kulli and other sites.

This culture has been divided into three phases. The first. typologically is represented at Amri in Sind. where characteristic ware was first identified by Majumdar ; the second, by the cemetery of Nal in Baluchistan excavated by Hargreaves ; and the third, the site of Nundara, excavated by Stein in South Baluchistan (which is a convenient representative of a middle phase). One of the most notable things is that in all three phases are totally absent the clay figures of animals and humans. But the pottery wares of the culture indicate that these were prepared under one inclusive head. Similar type of sherds have been also found at the Kargushki-damb in Rakshan (which yielded typical Nal sherds), where trial trenches has been made by Stein and was associated (sherds) with the wall of buildings. These sherds were necessarily the product of the same culture.

At Nundara, Stein excavated some walls of mud bricks and the masonry structures. These bricks were 21 by 10 by 4 inches in dimensions. Similar type of mud bricks were used at the Nal cemetery to make the rectangular tombs of two infants and an adult. Stone was also used for the building. purposes. Both (stone and brick) inner faces of the walls were fully plastered A t Nundara, coursed stone slabs set in mud mortar were also used for the walls of houses at least up to window height. Majumdar describes the surface indications of the outlines of countless rooms ; both large and small, but apparently separated from it by an open space.

Piggott has given us a vivid description of the town planning of the Nundara culture, as mentioned below :

> "At Nundara groups of rooms which may constitute associated elements fall into blocks about 40 feet square, within which there may be eight or ten sub-divisions of sizes varying from large rooms or courtyards 15 by 15 or 15 by 10 feet, to small compartments 8 by 5 feet or less and in two of the blocks there seems to be a fairly consistent plan of large rooms or courtyards, each associated with half a dozen smaller ones. Rooms of similar proportions also seem characteristic of the Sind sites. At Nundara, as mentioned by Piggott, several chambers with walls preserved to a height of at least 10 feet, in one instance, had no openings in the wall and contained a massive square stone built pillar in the centre. Such chambers can best be explained as cellars, entered by trap doors from the room above, the central pillar acting as additional support to the floor."

State Museum Lucknow

> "The width of roadways between houses can be measured in a few instances—6 to 8 feet at Nundara, and narrow alleys 3 feet to 2 feet 6 inchcs wide at Lohri and Kohtras Buthi."
>
> (as mentioned by Piggott in his book, "Pre-Proto History of India").

Cemetery of Nal Culture.—First, the site had been explored by Colonel Jacobs and some other unscientific diggers. Colonel Jacobs found here 300 odd pots. Later on, Hargreaves excavated 30 and 40 burial groups, between site A and B in the cemetery. Generally these burials were made of mud bricks, the individual bricks measuring 21 by 9 by 3½ inches. Both inhumation and fractional, burials have been found here. The following types of grave goods were associated with these burials ; the characteristic pottery vessels in 270 vessels (as mentioned by Piggott), skeletal remains of six or seven individuals, a flat copper axe (accompanied oxe fractional burial at Nal), animal bones (mainly sheep or goat as mentioned by Piggott) a, colour grinder, shell and pottery bangles, mostly these all grave goods were associated with the fractional burials. Only pottery, beads, necklaces (with the two infants) were found with the inhumation burials.

The burials at Nal were normally placed in earth without any form of protection, but three of the complete inhumations (the adult and two infants as referred by Piggott) were enclosed by rectangular mud-brik graves, the individual bricks measuring 21 by 9 by 30 inches. No trace of covering was deiected till now. Some of the Nal groups represented several individuals, adults and childran together, others comprised merely a few bones from a single skeleton.

Chief Characteristics of the Pottery Wares.—(1) The pots are normally wheel turned.

(2) The following types of colours were used in the pots : black, white, green, pale, grey or dark brownish colour. Sometimes, red paint is used as a secondary colour in Amri and the Nundara group of sites and at Nal itself and few other sites this red paint is augmented by yellow, blue and green pigments to form an elaborate polychrome style. Piggott has referred in his book ("Pre-Proto History of India") that "this use of blue and yellow colour is very remarkable, as it is almost unknown elsewhere in pre-Historic Western Asia."

(3) Frequently, a white slip is applied as a background for painted ornament.

(4) The vast majority of all vessels of Nal and of Amri-ware have a distinctively very fine soft buff or pinkish paste, which may sometimes approach an off-white and occasionally have a green tinge.

(5) The following types of pots have been found at Nal culture : Straight sided cups, squat shouldered pots rather similar to the bows, straight sided canister type of vessels (which is the most distinctive of all the Nal sherds), saucers (used as Chiragh), and tall globular beakers, etc. A couple of double cylindrical pots from Nal are also noted.

(6) The different motifs which were applied in these pots, are mentioned below : first a panelled arrangement is common, the panels being outlined horizontally and vertically with multiple lines. Then, within the rectangles so formed, a frequent motif is a secondary panel of black and white chequers,

outlined by concentric rectangles of alternate red and black lines. Finally, there is much use of horizontal bands made of such motifs as solid diamonds corner to corner, hatched diamonds, small chevrons, loops (sometimes multiple), the sigma ornament and scale pattern. The geometric motifs include the use of red, blue, green and yellow paint used in flat blocks of colour, but not in lines (as mentioned by Piggott in his book" Pre-Proto History of India").

(7) All motifs are firmly outlined in a black brownish paint applied with a stiff brush.

(8) Designs representing animal on plant forms are absent of Amri ware, but on the other hand are typical on Nal pots.

Piggott has rightly observed that "at the sites in the Nundara region Amri types appear to be associated superficially with those distinctive of Nundara itself, and in Sind Nal motifs and potsherds do occur in a strategraphical context, which implies that they are contemporary with at least a late phase of Amri. On the whole, the impression one gains is that while the curious and elaborate Nal style evolved in the mountain fastnesses of Jhalawan, the less distinctive Amri motifs enjoys a long popularity with little change in the Sind and that the Nundara style may well have continued to exist side by side with both of these."

Copper hoards or Metal working in the Amri-Nal Group.—In the cemetery area at Nal two hoards of copper implements were found, the first containing five objects, three of which were flat axes, the other two objects were a very long parallel sided chisel. Theot her copper hoard comprised two axes, an axe or chisel, a straight sided saw-part of a large knife or spear, head, and other fragment, probably of a knife. All these copper tools are similar to the Harappan culture. A few other fragments of copper implements were found at Nal and a copper bangle at Nundara. Similar types of nickles have been found at various other sites, such as Mesopotamia, Sumerian Copper, Mohenjodaro and Harappa, and Rajputana and Afghanistan.

Seal.—There was found one seal with the Nal cemetery. Other seals comprised of Steatite (a curious seal of irregular shape) and copper stamp seals. These seals are very common in the Harappan culture.

Beads.—Beads were found in some abundance in the Nal cemetery, biconical or barrel shaped and made of agate, carnelian and Lapis* Lazuli. Similar types of beads were also found at Ghazi-Shah and Pandi Wahi in Sind.

The rites of the Nal cemetery suggest comparison with the first phase of H cemetery at Harappa rather than with other sites, but this can hardly be taken as signifying any close connection between the two in culture or chronology. The houses built of stone or mud-brick, compare with those of Kulli or the Zhob Valley people. Ornamental zone of a vessel is again associate a close

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Note.—"Lapis is an exotic substance much valued in the ancient orient, and probably obtained mostly from Persia or Afghanistan. Lapis was an important substance which was used at Nal and Harappa and Mohenjodaro for making beads." —(*Piggott*).

resemblance with the Kulli-Mehi sites. Mainly squat bottle of the Kulli-Mehi sites is comparable with the 'canister' at Nal. The ware also resembles with the Jemdet Nasr wares of Mesopotamia. Piggot has rightly observed, "The drawing of the animals at Nal and Nundara might be compared with the firm competent outlines seen on engravad bone and shell plaques in early Dynastic Sumer, but in no other respects can Sumerian contacts be traced. If, in its early stages the Amri-Nal culture has a vaguely Iranian origin, its later developments either took place in isolation or were the result of contact with the Harappan culture to the last."

CHAPTER IX

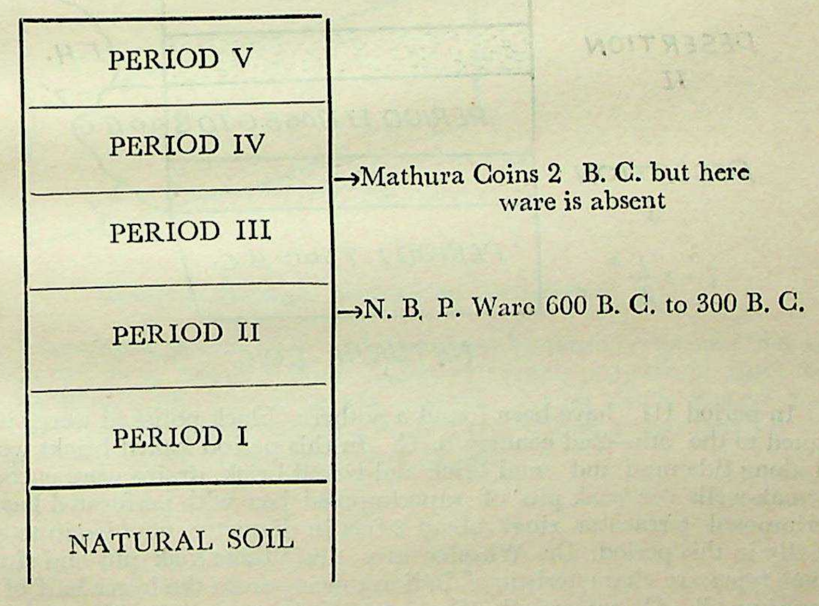
HASTINAPUR

The ancient ruins of Hastinapur is situated, in Meerut district, at Mavana Tahsil, on the dried basin of the Ganges 'Bude Ganga). As peoples generally believed, these mounds are the remains of Hastinapur of the *Mahabharata* time. We get clear references from the Puranas, that when the city had been fled away·by the floods of the Ganga's, the King Nichachhu of Hastinapur setted his residence at Kaushambi.

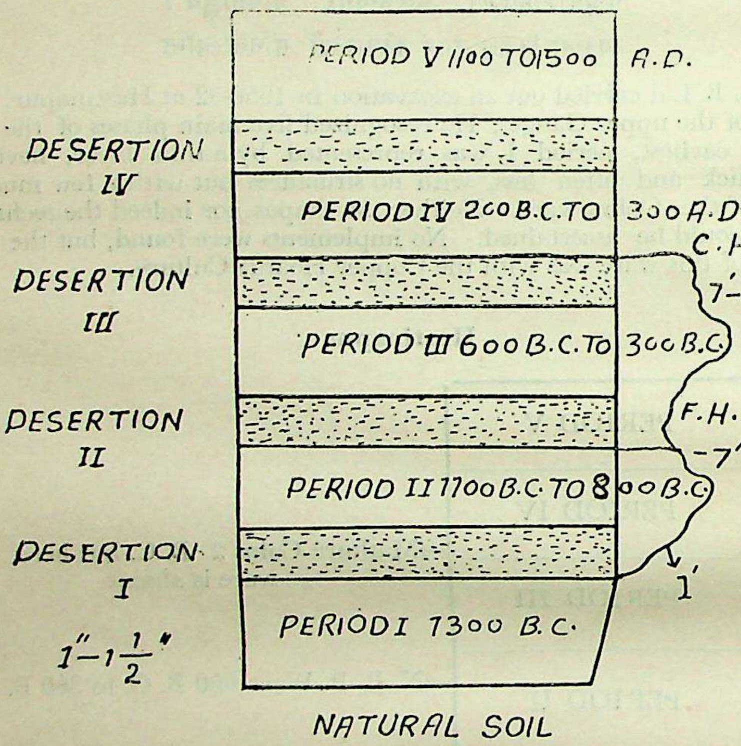
गङ्गयाऽपहृतेऽपि अस्मिन्नगरे नागसाह्वये ।
त्यक्त्वा निचक्षु नगरं कौशाम्ब्यां संनिवत्स्यन्ति

Mr. B. B. Lal carried out an excavation in 1950-52 at Hastinapur, near an old course of the upper Ganges. He recognized five main phases of the occupation. The earliest, period I, was represented by a thin layer, never more than 1½′ thick and often less, with no structures but with a few much worn fragments of the Ochre ware. Neither the shapes nor indeed the technique of the pottery could be ascertained. No implements were found, but the possible association of this ware was with the Copper Hoards Culture.

Hastinapur

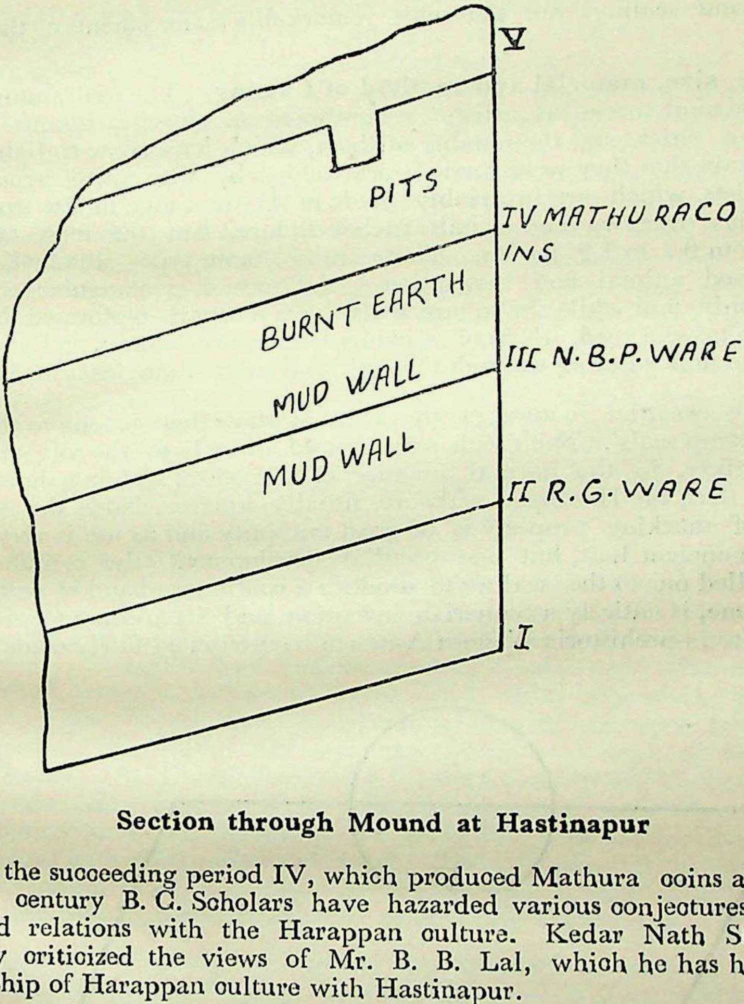

PERIOD V
PERIOD IV
→Mathura Coins 2 B. C. but here ware is absent
PERIOD III
→N. B. P. Ware 600 B. C. to 300 B. C.
PERIOD II
PERIOD I
NATURAL SOIL

These is no overlap with period II, which contained the Painted Grey Ware together with the remains of mud or mud brick walls but no clear evidence of the use of baked bricks. Copper was found in the form of an arrow head, a nail parer, an antimony rod and a few fragments ; there were no stone implements and no iron objects, though in the uppermost levels lumps of iron ore were encountered. Two glass bangles from these strata seem to be the earliest yet recorded from India. The humped bull was represented both by terracotta figurines and by actual bones, which occurred in large numbers with those of buffalo, horse, sheep and pig. Whilst these represent considerable domestic herds and flocks, the bones of deer indicate that hunting supplemented farming, but more notable was the discovery of charred grains of rice, which with other rice recently recovered from Chalcolithic Navda-Toli, carry back rice cultivation in the sub-continent many centuries behind the earliest date previously recorded (the third century B. C.). Altogether, the remains of the period, dated roughly to 800—500 B. C.


PERIOD V 1100 TO 1500 A.D.
DESERTION IV
PERIOD IV 200 B.C. TO 300 A.D.
C.H
7'-8'
DESERTION III
PERIOD III 600 B.C. To 300 B.C.
DESERTION II
F.H.
-7'
PERIOD II 1100 B.C. TO 800 B.C.
DESERTION I
1'
PERIOD I 1300 B.C.
1"-1 1/2"
NATURAL SOIL

In period III, have been found a nothern black polished were, which is assigned to the 5th—2nd century B. C. In this period baked bricks were now used along side mud and mud brick and baked brick, drains were encountered and 'soak-wells' or 'soak pits' of superimposed jars with perforated bases or of superimposed terracotta rings about 2 feet in diameter now begin to appear, specially in this period. Dr. Wheeler says that "these soak pits and ring wells of these types are characteristic of Indian towns—from the latter half of the Ist millennium B. C. onwards." The same opinion is also drawn by Dr. Sankalia.

In period III iron was regularly used for the first time : barbed and socketed arrowheads, chisels and sickles of this metal are recorded, although copper was retained for antimony rods, nailparers and variety of other purposes. Terracotta figurine of the elephant, are better modelled than in the preceding period. Cast copper coins both rectangular and round, were also found in the site. Probably this period was ended in fire about 2nd century B. C. or little earlier. It is quite certain that Hastinapur coins (square and round) came into use during the Northern Black Polished Ware period.



Section through Mound at Hastinapur

In the succeeding period IV, which produced Mathura coins ascribed to the 2nd century B. C. Scholars have hazarded various conjectures about the dates and relations with the Harappan culture. Kedar Nath Shastri has variously criticized the views of Mr. B. B. Lal, which he has held for the relationship of Harappan culture with Hastinapur.

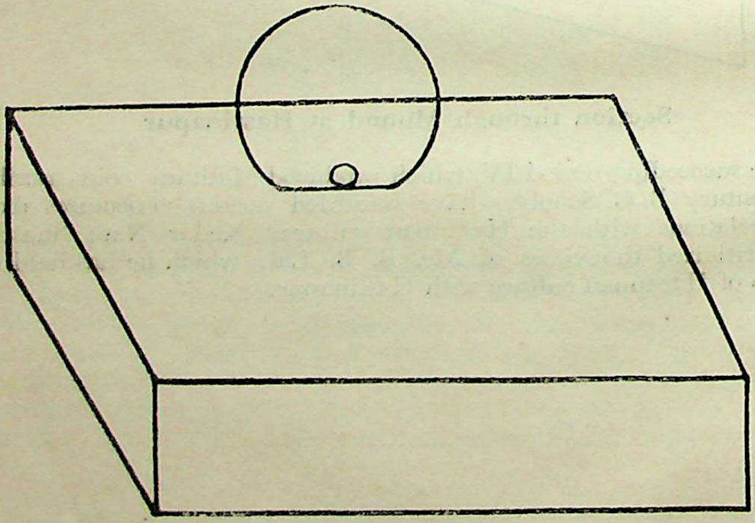
CHAPTER X

Indus Seals

Seal and sealings are the most remarkable achievements of the Indus civilization.

Shape, size, material and method of Casting. The seal amulets are, however, the most successful artistic achievement of the inhabitants of the ancient Indus cities, and the number of them, which have come to light make it fairly certain that they were carried practically by the entire population. These amulets, which are invariably made of steatite range in size from half an inch, to just over two and a half inches square, but the most common sizes run from 0.7 to 1.2 inches. There are two main types ; the first, square with a carved animal and inscription ; the second, rectangular with an inscription only, and while the square seals have a small perforated boss at the back to take a cord, those of rectangular shape or convex on the reverse side, with the hole running through the seal itself at right angles to its length.

But the essential feature of the seals is that they belong to the class known as 'Stamp seals'. Such seals were pressed directly to the soft material used for sealing, in the normal manner of a modern seal or a signet-ring, further than that, the Harappan seals are usually square. Now the seal as a method of marking property is of great antiquity and its use is very widespread in the ancient East, but one peculiar development, the cylinder seal which is rolled on to the sealing to produce a continuous band of pattern or an oblong scene, is entirely a Sumerian invention, and its appearance in any ancient culture in-prehistoric Western Asia can be attributed fairly confidently



Rectangular Steatite Seals, with its hole on the top to Sumerian influence, as for instance the rare cylinder seals in pre-historic Egypt. The fact that cylinder seals are as rare in the Harappan civilization as they are in Egypt stresses the independence of the Indian culture of any but the most indirect and slight Sumerian influence, and the use of stamp seals certainly cannot be attributed to that source.

The stamp seal is known, in one form or another, as early as Halaf times in Syria (with decorative patterns, not naturalistic designs) and similar 'button-seals' appear in the Tal-i-Bakun. A phase in Southern Bersia, with clay sealings showing that they were indeed used for this purpose and again in Sialk III, Giyan V. and Hissar I in the north. All these seals are normally decorated with geometric designs, but at Giyan there is a roughly engraved figure of a scorpion. The fact that the Harappan culture is characterized by stamp seals should indicate that its eventual antecedents are likely to be found in Persia. But it is curious that stamp seals are unknown in any of the Baluchistan cultures, the couple from North Baluchistan, being of Harappan type and probably imported from the plains. While see there are certain points in common between Harappa painted pottery and that of North Baluchistan, this discrepancy in respect of seals is very interesting, and seems to place a barrier in the way of any more or less direct derivation of the Harappan civilization from any of the known peasant cultures of Baluchistan. The individual technique of the Harappan seals, which were subjected to heat after carving so that the steatite of which they were made acquired a lustrous white surface, can be recognized on the seal from Nal, although there the technique of engraving is not that of the Harappan artist, but that shown in the local pot designs.

The seals were cut into shape with a saw, then finished first with a knife or chisel, and finally with an abrasive. The carving of the figures and signs was done with a small chisel, a triangular burin being sometimes used for the inscriptions ; and for certain details a small drill was employed. After the seal amulet had been completed, it was coated with an alkali and then heated, which gave it its attractive, dead white appearance and slightly lustrous surface. Apart from two cylindrical steatite specimens, both of Indian workmanship, the stamp seal was exclusively used both at Harappa and Mohenjodaro. At Chanhudaro only the square stamp seal of steatite is found in the Harappan levels, but in the later Jhukar period, seals of quite different types, mostly round and devoid of any inscription were chiefly made of pottery and faience with a few stone and metal. The majority of the sealings were made of mud, which has disappeared in the course of time in the same way as the mud plaster has disentegrated on the burnt brick walls of Mohenjodaro.

The Harappan seals are quite the most enigmatic of the objects found. In spite of their large members they must have had a restricted use, and it follows that if they had the functions of identification, they must have been restricted to certain classes of individuals such as officials and merchants. It is possible also to make certain detailed observations about the rarer types of seal. Those showing a goat are early, the latest being from the early part of Period III. On the other hand Mesopotamian influences, producing the 'Gilgamesh' type seals of a hero subduing tigers, seem to be late, the earliest being from the earlier part of Period III, and those showing the horned god, coming from the middle of that period, are also late.

In the absence of properly recorded stratigraphy, only the most generalized opinions can be formed, but it is possible to say from an examination of the records that seals are relatively scarce at the start of Period II, and that those in the levels of Period I above—25 feet may be in true context, but in the case of those below this level it is very doubtful. No deductions can be made regarding the ownership of the more peculiar seals. It is not possible from their find-spots to show that the horned god seals were the property of the priesthood, or that the hero seals came from a quarter inhabited by Mesopotamian merchants or that the mountain goats were passports of traders from Baluchistan. These seals, which are normally square, were Sawn out from a block of steatite, smoothed, engraved with a picture and a line of characters and coated with an alkali substance which was baked on. The picture was usually of an animal, and of those the most common is the *urus ox*, often termed a unicorn as only one horn is shown in profile. In front of the urus ox is almost invariably an object which, from the impression on clay found at Harappa, has been shown to be a standard or some similar object, sometime carried in procession. In one case only is this standard replaced by a strange semi-human figure with an animal's head and tail. Every seal has a different inscription, which rules out any connection with the animal or other object depicted, and also the possibility of its being an invocation or charm which would be liable to constant repetition.

Seal impressions are very uncommon and it was only as the result of some having been burnt, together with the object, generally of matting, to which they were attached, that they have been preserved. Clay or faience three sided prisms, which Mackay called amulets, were impressed with long rectangular seals and fired, which has ensured the survival of some of them. The most definite true sealing, which supports most clearly the identification of the seals as having that function, is one showing the impression of the cords and the matting package it was used to seal.

Not Amulets, but Seals.—At the excavation of Mohenjodaro and Harappa, there did not have found the stamps of steatite seals on the soil. So most of the scholars believed that these seals to have been used as amulets (for example Mackay), but Marshall and others have rejected this view. The recent excavations at Lothal and Kalibangan have revealed fullest fruition that these seals must have been used for the purposes of seals. Specially Lothal has also thrown light about the firing methods of these seals. Of course, this is most unlikely as there is no hole or attachment for suspension and to have tucked them away in an amulet case seems absured. The idea put forward by Hunter and Fabri that these were some form of coin or tokens used by merchants indicating a payment obligation seems to hold a far greater measure of probability.

***Palaeography of the Seals.**—Scholars have different opinions about this script. Some say that this 'Lipi' belonged to the Sumerian civilization, others with Phoenician. But most of the scholars believed that this is Indian origin. However, there is no specific evidence, which can testify this argument. Therefore, it has become a question of suspension before us.

**Note.*—"The Indus people had invented writing, for which they employed a script which belongs to the same order as other quasi-pictographic scripts of the period, such as the Proto Elamitic, Early Sumerian, Minoan or Egyptian. There are found 396 signs of the script accompanied by inscription on seals and sealings, pottery fragments. copper tablets, and even bangles of vitrified clay. Signs are also found in combination, while characters are modified by the addition of accents, or strokes. There are also seen groups of strokes never exceeding twelve in number which have perhaps a phonetic rather than a numerical value. The direction of the writing is seen generally to be from right to left, except for continuation. The large number of signs again rather shows that the script was not an alphabetic one but phonetic." —*Dr. Sankalia.*

Forty-eight (48) of these seals share only three inscriptions of which one, appears 32 times ; this and another, are found also many times on rectangular seals, either in this form or with their first and last characters reversed. On the backs of small seals is what must be a numeral, followed by a series of 1st numbering one to four or those also may be inscribed in the reverse order. *The Harappan script is to all intents and purposes an integral part of the seals and must therefore have come into existence at the same time or earlier.*

The recent excavation, made by Braj Basi Lal at Kalibangan have revealed that the script was written from right to left side.

Harappan religions depicted on seals. The seal, amulets and talismans of stone and pottery provide the largest contribution to the scanty store of knowledge that it has been possible to amass concerning the religious beliefs of the Harappan people.

Siva-Pasupati worship

There is more than one representation on seals from Mohenjodaro and Harappa of a male god ; horned and three faced (the trimukha and trinayan of Siva), sitting in the position of a Yogi, has legs bent double, heel to heel, and surrounded on one seal by four beasts, the ***elephant***, the ***tiger***, the ***rhinoceros*** aud the *buffalo*, with a couple of deer by the throne at his feet. There can be little doubt that we have here the prototype of (as identified by Marshall, at first, the prototype of Pasupati Siva) the great god Siva as Lord of the Beasts and Prince of Yogis ; he may have been conceived as four faced, and with his four animals looks to the four quarters of the earth. This would indeed recall the symbolical elephant, lion, horse, and bull on the Mauryan column of the third century B. C. at Sarnath. The deer by the god's throne make another significant link with later religion, and with Sarnath for, similarly placed, they are the inevitable accompaniment of Buddha in representations of the Deer Park Sermon. There is also the last characteristic of the historic Siva in this figure, a pair of horns crowning his head to denote the deity and anticipating the trisula or trident of the Saivas, or the triratna, the three jewels of the Buddhists.

Marshall has stated clearly about this seal :

> "It has always been suspected that he was one of the oldest Indian gods, and that his worship dated from the pre-historic period—a supposition which is justified by this interpretation of the figure on the seal amulet."

No less than three seals bearing a representation of this deity have been unearthed, in two cases the god being seated on a stool, and in the third on the ground.* On all three seals, he is nude, save for a cincture round the waist, but wears a number of bangles, in two seals, he has three faces, and on the third a single face in profile. All three representations have horns, but on two seals a sprig of flowers or leaves rising from the head. Between the horns strongly suggests that the figure so ornamented was a fertility or vegetation god, analogous with Siva, who personifies the reproductive powers of nature.

**Note.*—Salatore recognized as idol of Agni, in which flames are flaring out, but K. N. Shastri as a collection of several animal's organs.

Tree Worship*

Another interesting seal amulet depicts quite a different religious subject. Here a horned goddess is shown in the midst of a pipal or sacred fig tree, before which another horned deity is kneeling and doing obeisance. Both the goddess and her worshipper wear long plaits of hair, have their arms adorned with many bangles ; and in the case of the latter, and possibly of the former also, there is a floral or leafy spray springing from the head between the horns. Behind the worshipper a goat with a human face, looks on with evident interest. A row of female spirits or deities, facing the opposite way to the scene above, occupies the whole of the lower register of the seal amulet, each figure wearing a sprig on the head, a long pigtail behind, but no horns. These figures, the mystical seven in number, recall the small-pox goddess 'Sittala' and her six sisters—a primitive Indian cult regarded as indigenous.

According to Mackay, "all these beliefs, which are undoubtedly very old, may also have been associated with the pipal tree, in pre-historic times." It seems certain that this tree was connected by the Harappan people with a particular beast, the Urus Ox so commonly shown on the seal amulets.

A well known seal amulet depicts a conventionalised form of the tree with the heads and necks of two of these animals projecting from its base.

Naga Worship. It is to be noted that a deity in the same posture of a Yogi, with a Naga kneeling in prayer to him with uplifted hands on either side of him, is also found portrayed on a faience sealing from Mohenjodaro, while another seal portrays the deity in the same posture but with only one face. A reference has also already been made to the stone portrait head of a Yogi with the eyes fixed on the tip of of the nose.**

Mr. N. P. Chanda takes the standing four-armed figure occurring among the signs of the Indus script to be that of a deity and indicating that four armed deities were included in the Indus pantheon, anticipating the latter four-armed Hindu gods like Brahma, Vishnu and Siva.

**Note.*—Tree worship in two forms, (1) in its natural form, (2) what was worshipped was not the tree but its in-dwelling spirit.

***Note.*—There are two features of Nagas in later sculptures, (1) simply as Nagas, (2) half man (god's face) and half Nagas.

नागानाँ वक्ष्यते रुपं—
नागेरुर्ध्वं नराकृति ।
सर्पाकारुधो भागं
मस्तके भोगमण्डलम ।
'नागो एरावत पादे वंदित'
नागो बुद्ध पादे वंदति ।

Yogi Posture. He also points to the figures of standing deities on some six seals of Mohenjodaro as those of deities in the posture of Yoga known as Kayotsarga, a standing posture peculiar to the Jain Yogis as illustrated, for instance, in the famous statue of Jina Rishabhava of about second century A. D., on view at Muttra Museum. The name Rishabha itself means bull, which is also the emblem of the Jina, It is curious that seals also show a standing deity with a bull in the foreground. Can it be the forerunner of Rishabha ? If so Jainism also, along with Saivism, must take it place as one)of the oldest religions of Chalcolithic origins, thus helping over the hiatus between the Indus and subsequent Indian civilizations as phases in a common cultural evolution.

Lings and Yoni Worship

Along with this worship of Sakti and Siva was also that of Linga and Yoni, as evidence in the realistically modelled and unmistakable figures in stone of both found in the Indus Valley and Baluchistan, together with numerous ring stones. Indeed, three types of cult stones are brought to light at Mohenjodaro and Harappa, thee boetylic, the phallic and the Yoni ringstones, of which the smaller specimens carried and worn as amulete are more numerous than the larger ones which were objects of worship.

Mother Goddess Worship

The numerous clay figurines of women suggest that, as in Baluchistan, there was some form of worship of a Mother Goddess in which these figures played their part in household shrines, and there is a sealing which bears a representation of a female from whose womb a plant issues, and suggests the idea of an earth goddess concerned with vegetation. Such goddesses are common in the Hinduism of the countryside today—the gramadevtas of many a rustic shrine, are not the Brahmins, whose authority dates back to the Aryan invasion of the middle of the first millennium B. C., but outcastes who still know the ways of the gods before the gods.*

Animal Worship

Overwhelming evidence of the worship of animals on the part of the people of the ancient Indus Valley is provided by the seal amulets, which portray a varied assortment of beasts. Anong these, is a powerful looking bull with one horn, although it is possible that the representations fail to show the second horn behind the first.

Other animals portrayed are the elephant, the tiger and buffalo, two kinds of oxen—one a short horned animal and the other a humped bull—the rhinoceros, the crocodile and a queer, composite beast with a human face, the trunk of an elephant, the horns and forequarters of a bull, and the hindquarters and tail of a tiger, which probably represents the fusion of several duties in one animal form.

"We must therefore hold that there is an organic relationship between the ancient culture of the Indus Valley and the Hinduism of today."—*Majumdar*.

"The religion of the Harappan people had some features suggesting those characteristics of later Hinduism which are not to be found in the earliest stratum of Indian religious literature."—*A. L. Basham.*

"Fredrichs has identified this animal as the urus-bull and he thinks that its two varieties 'Bos primigenius and Bos namadicus are plainly indicated on the seal amulets."

There is reason to think that most of these animals were kept in captivity for the great majority have a manger or food vessel before them, while in front of the Urus bull, there invariably appears a curious object which has not yet been satisfactorily identified but is regarded by some authorities as an altar, and we can say in the words of Marshall :—

> "The people of Mohenjodaro had not only recahed the stage of anthropomorphising their deities, but were worshipping them in that form as well as in the anioonic."*

स्वर्गादुत्तुगंममलं विषाणं यत्र शूलिन। ।
स्वात्मविहितं दृष्ट्वा मर्त्यों शिवपुरं वृजेत् ।।

Mahabharat

On one seal, a lady is sitting and her hairs are spranging out, hanging through over the shoulders, and her hands are raised. Some scholars have suggested, that this is a figure of Jagat-Janani.

Another seal amulet shows a buffalo which has obviously attacked a group of people, and is standing triumphant among its victims ; it is possible that this is a representation of a deity overcoming his enemies.

**Note.*—"For the highly conventionalized type of the image of what he justifiably describes as the prototype of Siva-Pasupati its stylized details and the facts that the kindred image portrayed on the faience sealing is being worshipped by the Nagas clearly point to its being 'a copy of cult idol'. The decoration (*cf.* the armlets, head-dress, etc.), the sitting posture, the mode of showing the hands, the horns on the head etc. appeared also on other figures, gome of whi ch may depict the different aspects of the same god. The nude ooddess, either in association with a tree or not, with some of the above characteristics is shown as an object of veneration. Many composit human dnd animal figures found on the seals and amulets very probably stand for oivinities in their the rianthropic or anthropomorphic forms. though many thers are to be regarded as mere accessories. Most, if not all, of the above types of figures appear to have been based on actual icons of cult gods which were being worshipped by the people in those days."

(Dr. Banerji, D. of Hindu Iconography).

Shiva—

केयूर हार सम्पन्नः कटिसूत्र भ्यान्वितः ।
नीलकण्ठो मनोहरः नागाभरण भूषितः ।।
दशाभिर्बाहुभिर्वाथ भुजैष्षोडशभिः क्वचित् ।
अष्टाश भुजं क्वापि चतुर्बाहु रथापिवा ।।
अक्षमालामसि शक्तिं शूलं च दक्षिणे ।
खट्वाङ्ग भुजगं चैव कपालं खेटकं यथा ।।
वाणं चक्रं गदां चैव दक्षिणेऽभ्यधिं भवेत् ।

* * * *

त्रिशूलं उमरुं चैवं वरदं चाक्षमालिकाम ।। (अंशु०)

The goat always occupies a secondary position on the seals, and may therefore have represented a minor deity. The gharial or fish-eating crocodile, which quite frequently appears on the amulets, usually with a fish between its jaws, may have been regarded as the emblem of river god. It is probably that snakes too, were venerated, if not, actually worshipped, since a snake cult has always been popular in India. No carved figures of snakes have been found at Mohenjodaro, however, but one has been unearthed at Harappa.

No birds appear on the seal. Another type of hero or demi-god, who may also have had some association with Sumer appears on three seal amulets from Mohenjodaro, where he is shown struggling with two tigers.

The Indus seals clearly shows that several animals were merged into one and indeed seals have been found showing three different heads of a short horned bull, a Urus bull and an antelope.

Trade, Commerce and Seals. The representation on a seal of a master ship, with a central cabin and the steersman, seated at the rudder, indicates that the people of the Indus Valley were acquainted with maritime vessels. The boat has asharply upturned prow and stern similar to the archaic representations on early Minoan seals, cylinders of Sumer and the pre-dynastic pottery of Egypt. Dr. Mackay thinks, "that the Indus Valley was in touch with Sumer and Elam by the sea route also." Mohenjodaro thus appears to have been a great inland port carrying on trade with Ur and Kish, probably also with Egypt.

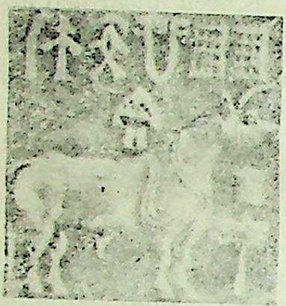
Climate and Seals. By the seals showing animals which were denizens of dense forests, throws interesting light on the climatic influences over the Indus Valley.

Seals are helpful in Dating. It is however, to a great extent on the evidence of seals of Indus type found on Mesopotamian sites that our dating for the culture that produced them depends. The evidence of those which can be dated with any degree of confidence has been carefully reviewed by Wheeler who has shown that, "on current dating, the maximum period required to cover these possibilities would be 2500—1500 B. C. with a strong focus on 2350 B. C.

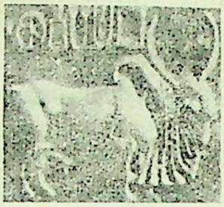
Art of the Seals. Some of the animals on the larger and finer seals are beautifully portrayed and though their convention provide little scope for the expression of movement, much care was lavished on the modelling.

"A specimen bearing the figure of a humped of Brahmani bull is a very good example of the fine work that could be produced." The muscles ripple under the skin in a most realistic fashion, and the well nourished hump drooping at the back is also extremely well engraved, especially when it is remembered that all the work had to be done on so small a scale.

Examples of artistic human form are not numerous, the terracotta figurines hardly showing any art. Of stone images few as they are, three are worthy of mention ; one is that of a yogi with meditative eyes fixed on the tip of the nose. Another is a portrait head showing prominent cheek bones, wide, thin lipped mouth, but ugly saucer like ears. There is a third seated image showing a shawal worn. We may also note in this connection the bronze figurine of a dancing girl, showing disproportionately long arms and legs and beating time to music with her feet. These are two remarkable statuettes found at Harappa, one of which, of redstone, imported from a distance shows faithful modelling of fleshy parts, and the other of dark grey state, the figure of a male dancer, standing on his right leg with the left leg raised high, the ancestor of Siva Nataraja. Both these statuettes anticipate Greek artistry by their striking anatomical truth, just as the seals already referred to anticipate the Greek delineation of animal forms.*



Steatile Seal from Mohanjodaro.



Steatile Seal from Mohanjodaro.

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*Some representations on amulet seals showing men showing a wild goat and a large antelope with bow and arrows and the remains of large antlers of deer and stags indicate that hunting was indulged in. —*Mackay*.

CHAPTER XI

Malwa Culture and its various sites

The pottery, which have been found in Malwa Culture, Wheeler mentions them as a Malwa ware (painted black on red ware).

Two or three sites of this culture are excavated, two or three are in the Chambal Valley, of which Nagda was excavated in 1956-57, whereas Maheshwar and Navdatoli on the Narmada were excavated in 1952-53 and 1957-59. The report of the work at Nagda is not yet published, but that of the first season's on the latter site is available. Moreover, Nagda was extensively dug and it gives a fairly good picture of the Chalcolithic. Malwa. This is, therefore, described in detail here.

'*Navdatoli*' is situated opposite Maheshwar on the Narmada, about 60, miles south of Indore. Both these sites stand on an old crossing of the river which itself is a great commercial artery dividing India into two—Northern and Southern :

> "This black soil—at Navdatoli, a small hamlet now occupied by boatmen (navdas)—covers a fairly large area, about 2 furlongs by 2 furlongs, and caps the top of the four mounds which some 4,000 years age probably formed a single unit, but was later cut up by erosion. This single mound represented the topmost terrace of the Narmada, the river itself presumably was flowing at the foot of its northern extremity, though now flows at a distance of about three furlongs to the north. The present village of the navdas is situated on a still younger terrace" (as mentioned by *Wheeler*).

From the very beginning the inhabitants built round and square or rectangular huts. These houses were framed by thick wooden posts. Around these were put bamboo screens, which were then plastered with clay from outside and inside. The floor was also made of clay mixed with cow dung. Both were then given a thick coating of lime, so that the house when first built must have looked *spick and Span.* The size of the largest rectangular room was 20 feet by 40 feet. But sometimes, a circular hut was only three to four feet in diameter, the largest being 8 feet in diameter. So it is doubtful, if it (the small one) was meant for habitation. Such small huts might have been used for storing grain, hay, as the writer recently saw some in Kurnool, Andhra State. But normally in period II, the size of a room was 10 feet × 8 feet. How many persons lived in a room or a house can only be guessed. But possibly not more than four in a room of 8 feet × 10 feet. Secondly, the settlement was so often rebuilt as evidenced by house floors that it is difficult to distinguish the house plans by mere occurrences of post-holes :

> "But judging from the modern village of Navdatoli, one may guess that the pre-historic village might have had about 50 to 75 huts, supporting a population of 200 persons. In one house was found a well-made rectangular pit in the midst of it. These houses were built very close to each other. But between a row of 4 or 5 houses, it appears there was an open space, like a chowk. These houses were burnished also."—(*Wheeler*).

The Navdatolians had a large number of pottery vessels, which according to their fabric, shapes and designs fall into four distinctive groups, each having certain shapes and designs associated with a particular period.

The most common is a *pale red slipped fabric* with paintings in black over it. Since this occur throughout Malwa (an old geographical name for parts of Central India) it is called the Malwa ware. This occurs as a major pottery fabric right from the first occupation and runs through the entire Chalcolithic habitation. However in the earliest period only certain shapes and designs figure, both becoming more varied later.

'Black and red ware'.—Then there is a sprinkling of black and red ware, with paintings in white, comprising generally bowls and cups. This fabrics is confined only to Period I and seems definitely to be an import from the adjoining region of Rajputana, where at Ahar it occurs in profusion.

Though it copies some of the shapes of the Malwa ware, its own distinctive shapes are *shallow dish with broad, flat rim and stand*, and *a high concave walled cup with bulging bottom.* An almost complete bowl of the latter in fine *white slip* recalls a similar vessel from the earliest period at *Sialk*, in Iran. A band of running antelopes and dancing human figures seem to be characteristic designs in this fabric.

In period III occurs, for the first time, a new fabric called "Jorwe" after the "type site" in the Deccan. *This has a well baked core with a metallic ring and a matt red surface.* Comparatively limited numbers of shapes and designs figure in this ware. It is also at this time that the most distinctive form of a vessel occurs. This is the channel-spouted or teapot-like bowl. It is in Malwa fabric.

> "Wheeler says that "In 1958-59, we were lucky in getting a complete bowl, which leaves no doubt about its shape and function. It seems to have been a vessel with which ablutions were performed. A similar contrivance may be noticed in the channel shaped bowls from Western Asia."

> "Besides this important change in pottery, there was another very significant change in the life of the people. For the first couple of hundred years, the inhabitants principally ate wheat. But now other grains, like rice, masur, peas, vatana or mutter and khesari formed the regular diet of the people. These are the grains which are grown and eaten in the Nimad district today. The first discovery of its kind in India, shows that the food habits of a section of the people of Madhya Pradesh are at least 3000 years old. But we do not know how these grains were cultivated, for no ploughs have been found, a number of heavy stone rings, which have been discovered, might have been used as weights for digging sticks, as is still done by some primitive people in Orisssa. A number of querns were found in the excavation, which crushed the grains, as they were left by their users, right on the kitchen floor near chulas or hearths. It is however not to be presumed that the inhabitants were strictly vegetarians. In the debris of their houses, have been found remains of cattle, pig, sheep, goat and deer. Except the last, all must have been domesticated and eaten."

—(as mentioned by *Wheeler*)

Economically, thus, the early inhabitants of Navdatoli were fairly well off. They were essentially farmers or peasants though a section might be living by hunting and fishing. They did not yet know iron ; copper they used, but sparingly in the shape of simple, flat axes, fish hooks, pins and rings. In a latter phase possibly they used daggers or swords with a midrib, as suggested by a fragment found in 1958-59. So far their daily needs of cutting vegetables, scraping leather and piercing stone; they had to rely upon stone tools ; their blades are small that we call them "Microliths". These were hafted in bone and wooden handles, as we now-a-days fix our iron blade into a penknife. Among ornaments we have thousands of beads of sand, coated with a glare and called "faience" or chalk and a few of semi-precious stone such as agate, and carnaliam. These must have been strung into necklaces. Bangles and rings were also worn. These were of clay and copper. These earliest farmers in Madhya Pradesh lived, as we know from ***Carbon 14 dates.***

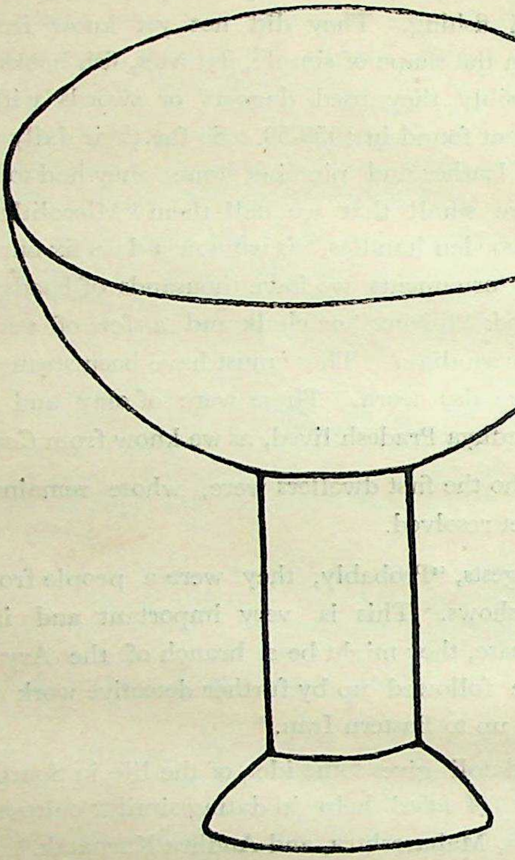
The question who the first dwellers were, whose remains are found all over Malwa, is not yet resolved.

> Wheelar suggests, "Probably, they were a people from Iran, as their pottery shows. This is very important and interesting clue. In that case, they might be a branch of the Aryans. This trail is to be followed up by further detective work across India and Pakistan up to Eastern Iran."

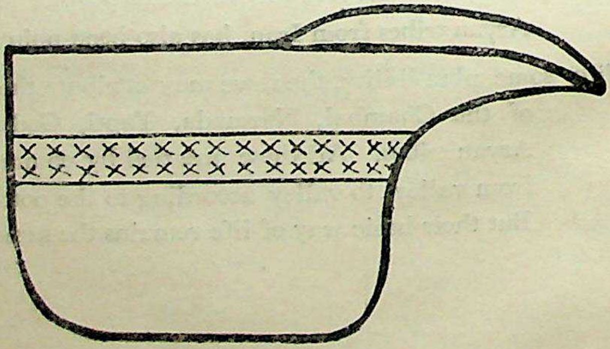
Not only Navdatoli gives some idea of the life in Southern Malwa, but its series of '*Carbon 14 dates*' help in dating similar cultures in Rajputana, Saurashtra, Khandesh, Maharashtra, and Andhra Karnatak.*

**Note:*—According to Shri Lal the grey ware people might be a group of Aryans or the महाभारत people, whereas the probability of the Malwa or Maheshwar-Navdatoli people, Haihayas or a mixed Aryan tribes from Iran, has also been pointed out by the writer.

With some plausibility, then, we may attribute the Chalcolithic cultures of the Chambal, Narmada, Tapti, Godavari valleys to some Aryan tribes. All these are tied by common features and differ from valley to valley according to the pottery, fabrics and types But their basic way of life remains the same.

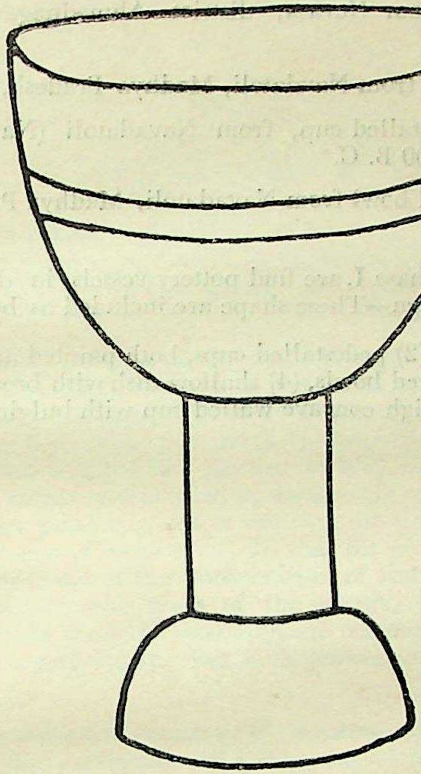


Pedestalled cup, unpainted from Navdatoli, Madhya Pradesh, C. 1500 B. C.



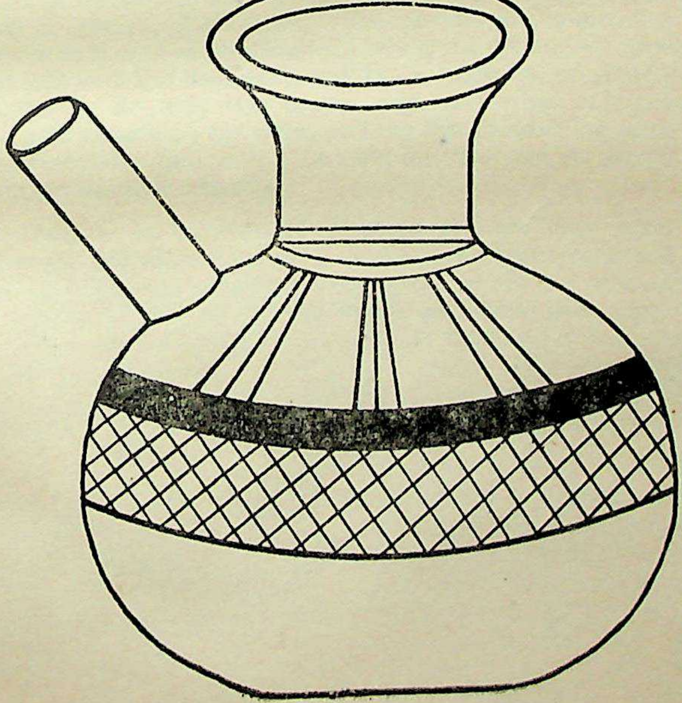
Channel spouted bowl from Navdatoli, Madhya Pradesh, C. 1300 B. C.

Malwa Culture and its various Sites



Pedestalled cup from Navdatoli, Madhya Pradesh C. 1500 B. C.

Southern Megalethic Culture



Spouted pot from Nevasa, District Amhednagar, Maharashtra, C. 1100 B. C.

1. Spouted jars from Nevasa, district Ahmednagar, Maharashtra, (C. 1100 B. C.)

2. Pedestalled cup, from Navdatoli, Madhya Pradesh, C. 1500 B. C.

3. Unpainted pedestalled cup, from Navadatoli (Navatoli), Madhya Pradesh, C. 1300 B. C.

4. Channel spouted bowl from Navadatoli, Madhya Pradesh, C. 1300 B. C

5. At Navdatoli, Phase I, we find pottery vessels in distinctive shapes fabrics and design—These shape are included as below :—

(1) Spouted jars, (2) pedestalled cups, both painted and unpainted, (3) channel spouted bowls, (4) shallow dish with broad, flat rim and stand, (5) a high concave walled cup with bulging bottom.

CHAPTER XII

Cemetery 'H' Culture

This cemetery was lying beyond the limits of the city of Harappa on the south and at a point some 120 yards to the north-east of cemetery R 37. This cemetery was named by its finding objects on the site and recorded by Vats.

Unquestionable evidence of the arrival of new-comers at Harappa after the main phase of occupation of the city is, however, afforded by the large cemetery H, itself of two periods, both of which have been shown by the recent excavations to be later than the R 37 cemetery, of Harappan Age. This latter cemetery was situated in a natural hallow, which, at some time after the disues of the cemetery was filled up level with debris which contained a mass of Harappan potsherds, and it was into this debries at a point some 120 yards to the north-east of cemetery R 37, that the graves of cemetery H, were dug. It is characteristic of the conservatism of the Harappan culture, that no significant change in the types of the pottery, could be detected between the layers underlying the R 37 cemetery, the cemetery itself or either of the *two debris*, layers overlying it. But with cemetery H the change is abrupt and decisive.

The earlier burials in cemetery H (stratum II) are extended inhumations, normally lying north-east and south-west, with the legs slightly flexed, and at an average depth of six feet beneath the present surface. About twenty-four such burials were found in the area excavated. Some were claimed as dismembered or fractional, but it is not clear whether these were not sometimes the result of ancient disturbance. The burials are sometimes accompanied by the remains of food offerings—in one grave an entire dismembered goat had been laid with the dead man and large numbers of pottery vessels were always present. In only two graves were any other objects found : a woman with a gold bangle on her wrist, and the three remaining teeth in the skull of another looped, round with gold wire, for 'security or decoration,' as *Wheeler* rather sardonically remarks.

The later burials in cemetery H (stratum I) were only some two to three feet below the present surface and consisted of true fractional burials in large pots, without any accompanying grave goods or offerings. The bones in many instances showed that the bodies must have been exposed after death for some time before burial, when only the skull and a few long bones were seleted for deposition, in the cemetery. About 140 such burials were found, and a dozen of these were of babies, buried whole and *crouched up* in the funeral jars. These jars were closed at the mouth by lids of broken pots.

The pottery from both strata of the cemetery is dissimilar from that of the Harappan culture, and although certain characteristic forms are confined to the upper and lower strata respectively, this distinctions is functional rather than cultural, and the technique of ware and painting is essentially the same in both phases of the cemetery. We can then regard it as a whole, and as the product of one culture despite the change in burial customs. Piggott has summarized the dominant skull form in the earlier phase seems to have been the proto-Australoid type, and there is at least one such skull among the second phase burials. Friederichs and Muller have also considered from the second phase of the cemetery—two skulls to be of Armonoid type. Piggott has also suggested that there appears an intrusive ethnic type which could plausibly be connected with migration from the West.

The pottery from both strata is very well made, with a hard red fabric and brilliant red slip, and frequent ornament painted on in black has often the same 'running' at the edges already commented on in the otherwise totally dissimilar were from Shahi-tump. Apart from Harappa, this ware is known only from two sites in Bahwalpur State ; 150 miles away on the other side of the Sutlej river. Although its technique in detail is not that of the Harappan ware, the use of a black on red decorative scheme may imply some sort of relationship, at least within the Red Ware Province as a whole, while one of the characteristic forms of the earlier phase of the cemetery is a squat 'offering dish', which itself might be compared with the higher Harappan types. But the decoration takes us into a world entirely removed from that of Harappa.

Motifs. Paintings characteristic motifs are sun or stars of various kinds, stylized plant forms, ring and dot patterns, groupings of straight and crinkled lines, and short lengths of zig-zag lines used to fill up backgrounds. And in addition to these more formal elements of design, there occur frequent representations of cattle, goats, peacocks, and fishes. Some other representations are a humped bull, cows, deer and dog and sometimes human figures are also represented and identified by the scholars on the cemetery of this sites. Zones and panels have also been used in conjunction with the foregoing motifs. Peacocks representations are more elaborately painted and artistically on the pots of this culture, that would not have been found so characteristic than this. One remarkable vass, from the upper stratum has a continuous frieze of design beginning with two peacocks and followed by a group, in which a man with wild, flying hair holds two cows, behind one of which is a dog. Humped cattle are shown standing between stylized trees.

It is very difficult to suggest even partial analogues to this remarkable series of pottery. As a whole, it is quite without parallel in any of the known cultures of the Ancient Orient, and one can only say that the groupings of the animals and trees does recall the "animals and landscape" designs of Kulli ware in rather more than general terms and the star and bird motifs in association recall similar patterns on pots from Giyan II, cemetery of C. 1550-1200 B. C. The treatment of the animals and men is quite different from that known in any of the pre-historic wares of Baluchistan or India, but although remote in time and space, it is worth mentioning that the treatment of the human figures, and to some extent that some of the animals is not altogether dissimilar to that on Samarra ware and its analogues in Persia. It is just possible that these similarities may represent at least an ancient Iranian or North Mesopotamian strain in the culture responsible for the burials in cemetery H. Beyond this, we can say nothing though again the possible relationship with the Kulli style may point to Baluchistan elements as well.

Piggott has suggested (it), in his book "Pre-Historic India" that "the cemetery H people are certainly new comers to the Harappa world, but where they came from, or what was their later history only further excavation can tell us."

Cemetery 'H' Culture

In "Ancient India No. 3" Dr. Wheeler identifies "the authors of the cemetery H at Harappa with the Vedic Aryans, and arrives at the conclusion that it were these latter people who, some time in or about 1500 B. C., barbarously destroyed the Indus civilization."

K. N. Shastri, (on the strength of his own findings) "I conclusively shown that the 'cemetery H' people could not be the Vedic Aryans."

Geldern has also held his theory and suggested that the cemetery H peoples were the Vedic Aryan, who were responsible for the sacking or decline of the city.

Archaeological evidences are ready to accept this previously held view, and also suggested the cemetery H peoples were not responsible for the devastation or destruction of the Harappan culture. The mound level, which is filled up with debris and in which lies the various pots of the Harappan culture, gives another significant strategraphical evidence, that this Harappan culture was already finished and the Aryans were not responsible for the destruction of the city.

Strategraphical Evidence

Archaeological evidence also gives us some fair idea about the burials. The bones, which have been found in graves, are not the type relics of the Vedic Aryans.

Sri B. B. Lal has published in one of his article and suggested that "How and in what way, Aryans have invaded the city, when there were none to invade."

CHAPTER XIII

Kalibangan

Kalibangan is the site, situated by the side of river Ghaggar, in Rajasthan. Here explored two mounds—Mound No. 1 and Mound No. 2. One mound is big and high than the other.

Mound No. 1.—In the upper level of this mound we find some Harappan objects and just below this level, have been found pre-Harappan sherds.

Mound No. I Stratification :—

Upper Level : *Harappan elements.*

Just below this upper level : *Pre-Harappan elements.*

State Museum Lucknow 7268

Here have been found the traces of a fortification wall, some other wall Burj and platform. This platform within the structure was not erected in the same period, when this wall might have been erected. The explorations have clearly revealed that this fortification wall was made by the new-comers towards southern side of this mound. This fortification wall may have been constructed slopely and also assignable to the sign of plaster. After excavation have emerged a tower of this mound. Most probably when new-comers came at this place they erected a fortification wall around this mound. Such type of walll is found only on mund No. 1, and some pots were also found on this mound, but we are not sure about this that these are the property of the pre-Harappan people of contemporary people or later new-comers, most probably of Aryans. These towns were constructed by mud bricks.

Mound No. 2.—Here Harappan elements and pre-Harappan elements have been found in the same stratum. This indicates that both cultures were rejoicing—their property lying side by side. In the upper stratum of this mound only Harappan elements have occured. Here also have found wooden drains, but not at Harappa.

Here, have been found, two seals, terracotta toys, heads, chess board, various copper and bronze fragments, and some stone made articles. These all articles are likely similar to Harappan objects.

Pots are distinctive in shapes, designs and fabrics, have been explored in large quantities they are beakers, bowls, jars, and based plates.

The town has been divided into blocks—in each house, there were 6 or 7 rooms, somewhere occurred well within the houses. There have been found a remains of 'Agni Vedi', in the houses, this indicates that these residing peoples were great devotees of Agni. These houses were built with mud earth (mud bricks) and plastered with mud also and the floors were prepared either of earthen bits or of terracotta bits. There the exploration found wooden beams, which indicate that these wooden beams were used for the construction of floors.

The skeletal remains that exploration has dug here are as mentioned below.

Buffaloes, pigs, sheep, goats, tortoise, camels, elephants, asses, rhinoceros, tigers and some birds. Writings, though obscured by the excavation, throw an interesting light on the writing method of Harappan script.

Mound No. 2.—Harappan civilization. In the same stratum, found some pre-Harappan elements. Here B. B. Lal marked that the script was written from right to left side, on the basis of the letters which were written one above the others. This may also be probable, that the script (letters) was written in one line from right to left, in other line from left to right, such type of writing is known as 'Bustrophedon'.

At the distance of 300 meters from the south citadel mound, there have been found two types of burials : (1) inhumation burial, (2) cremation burial. These burials comprised some grave goods, such as earthen poll and other objects buried in the earth with dead body. In cremation burials, the dead bodies were buried in the earth, after putting in some pots, while inhumations, dead bodies normally were buried in the earth comprising some grave goods. If this may be supposed that these mounds were used for the same purposes as in Mohenjodaro and Harappa, then it would be able to give a clear link of equality of the town planning between the Indus and Baluchistan. The eastern mound is big and clearly indicates towards the well planned town building of the culture. The other mound is small and probably built for the residence purpose of the high class personalities. It has been named by most of the scholars as *"a third capital of the Harappan Empire."*

CHAPTER XIV

Town Planning of the Harappan Culture

The antiquities unearthed at Mohenjodaro and Harappa point to a common and uniform "Town Planning" continuing methodical drainage system and matchless sanitary arrangement.

I. Houses.—(*a*) Private/Residential, (*b*) Public buildings, same size and similar planning—

(*a*) Constructed on mud-built platform wall 5 to 8 ft. thick with a foundation carried to considerable depth filled by sundried bricks.

(*b*) Varies from smallest ones of two rooms to a large like palace showing frontage 85 ft. depth 17 ft. built by "burnt-bricks" whereas it were made invariably of 'mud-bricks'.

(*c*) Generally small houses had in centre open like Babylone "Court-yard" paved with bricks, led flat, surrounded by well sized rooms having 'Entrance' from the street side, practically no windows (as suggested by Piggott) even in well preserved wall, possibly perforated "lattics" used as windows.

(*d*) Kitchen placed in the sheltered corner of the court-yard, "Bathrooms" generally placed at the street side paved with "sun-burnt bricks", sloped to a corner containing drain carrying off waste water. Bathrooms also provided wiih covered drains connected with outer drains.

(*e*) Ground floor containing "Store-rooms". Vertical pipes suggests upper storey also contained bathrooms.

(*f*) Stairway (made of solid masonary) implying upper storeys or at least flat-roofs "beams-holes" suggestive of definite upper floors, having living and sleeping apartments.

(*g*) *Lower houses* generally had well constructed by "Wedge-shaped" bricks.

II. Public building.—No temples have so far been found though scholars doubt of such monument.

(*a*) "*Great Bath*" having overall dimensions of building. Actual bathing-pool measuring 39 × 23 and 8 ft. deep situated in the middle—a most imposing structure in the citadel of Mohenjodaro aptly called by Marshall as a vast "Hydropattic Establishment"—a large open quadrange in the centre having a "Tank" measuring 39 × 23 × 8 ft., provided flight of steps with 15 ft. wide gallaries and rooms on all sides, and a "Swimming enclosure" fed by a well in one of the adjoining rooms. Water is discharged by huge drain provided in a corner of tank with a "Corbelled" roof more than 6 ft. high surrounded by 4 ft. thick wall, suggest of verandah and gallaries being double storeyed.

Near south-west corner is "Hammam" or hot water. Dr. Mackey suggests General Bath—for general public.

N. B.—Piggott suggests that series of small rooms were like changing-rooms.

(*b*) "*Collective buildings.*"—In addition there was another large building some 230 × 79 ft. planned as single architectural units containing arrangement of rooms suggesting that it was communal establishment or "College" near the Stupa with extra thick walls.

The next structure of equally "Curious plan" apparently a square hall about 80 ft. each way, with its roof supported on 20 rectangular pillars of bricks work is Pillared Hall.

Another most imposing stucture is "Dock Yard" of Lothal of burnt bricks, almost rectangular about 710 × 120 ft. with an extent of height of 14 ft. having a large opening in the eastern wall about 23 ft. wide called "inlet hɐuuɔl" and "spill-channel" on the south, probably regulating the outflow of water with an insertion of wooden door, evident from the grooves provided in the mouth.

Dr. Rao stratigraphically associated this enclosure with old river.

(*c*) "*State Granary*".—The largest building at Harappa measuring 169 × 135 ft. standing on a brick-built platform 150 ft. wide and probably 200 ft. long on back side storage blocks raised on brick sub-structures above the dump in two rows containing 6 blocks in each.

Wheeler says that 2 rows Granary were well ventilated and total floor space of granary—9,000 sq. ft.

Unique feature.—Constructed on wooden sleepers provided on certain intervals with a rivet on north side. Competent authorities remarked that till classical age, nowhere in the world such magnificient granary existed.

III. Draine. Elaborated drainage system a—unique feature—

(*a*) Below principal streets and many lanes ran a main drain 1 to 2 ft. deep covered with bricks provided with sump and 'Inspection Traps' at regular intervals.

(*b*) Individual house drains opened into street drains which in turn opened into "Great culverts" emptying into rivers.

(*c*) All drains and soak-pits were occasionally cleaned through "man-holes" at intervals. This, like town planning, again differs from "Sumer", where in most cases "vertical pottery" drainage—beneath court-yard, having no out-let was found.

(*d*) Drains vary in sizes and made of large bricks cemented with mud-mortars mixed with lime and gypsum.

(*a*) **IV. Streets.**—Theentire area was divided into 12 blocks, running from east to west and north to south crossing one another at right angle and dividing the city in rectangular blocks.

(*b*) At Mohanjodaro these roads are of considerable size and main road above 33 ft. wide, could accommodate many vehicles to pass at a time. First road running north to south 1/2 mile divides mounds into two parts meeting the street called "Oxford Circus".

(*c*) Generally, streets are parallel, 9 to 19 ft. wied.

V. Wells.—Usually, every house had a well but "Public Wells" providde between two houses with pavement of burnt bricks of "Wedged shape".

VI. Lamps.—At intervals indicate existence of street light.

VII. Citadel.—Both sites laid out on common ground plan dominated by an embatted acropolis built of mud or mud bricks, with rivetment of "baked bricks" (to a height of 40 to 33 ft. above the featureless plan) with a strong defensive wall suggests buildings of public character.

VIII. Burial.—Outside the city.

IX. Sanitation.—Rubbish heep of pottery/ashes found in deep tracks, rectangular bricked dust-bins, outside the house.

Different materials were used in the construction of the town.

Seven different layers have been recognized in the excavations at Mohenjodaro. The antiquties in all these levels are homogeneous, the only point of difference being the deterioration of masonry in the later occupations of the cities. Mud mortar was generally used as a cementing material. In drains, where more srrength or binding force was required, lime and gypsum mortar were used. The joints in some of the brick-work are so fine that even a thin knife cannot be inserted in them. Occasionally bitumen was used for water proofing. Foundations were carried to considerable depths and crude brick was used for infilling. Buildings were erected on artificial mud platforms as a precaution against floods to which ancient Sind was subject to. In most walls bricks were laid in the English bond method, in alternate headers and stretchers, care being taken to break the joints. A filling of clay or rubble was used between the faces in very thick walls in order to economize b ricks. In most cases the verticle alignment of buildings is marvellous, indicates that a plumb bob or a similar instrument was used. This was done by placing each course a little back from the course below or by employing specially moulded levelled edged bricks. Walls surmounting pavement were wainscoted with bricks laid on edge standing 3 ft. above the floor levels.

The buildings thus far unearthed in the Indus Valley fall into three main classes :

(1) dwelling-house.

(2) larger buildings.

(3) public baths.

There is much variation in the size of dwelling-houses. The smallest have no more than two rooms, while the largest are so vast as to rank almost as places. Outside walls of the dwelling-houses were generally plain.

A visitor to the ruins of Mohenjodaro (the city of the dead) is struck by the remarkable skill in town planning and sanitation displayed by the ancients, and, as an English writer has observed :

> "feels himself surrounded by ruins of some present-day working town in Lancashire."

At the hill sites in the narrow corridor between the Indus and the Kirthar range, excavated by Mr. Majumdar—bricks were never used as at Mohenjodaro, Harappa aud other sites. Hill-side houses were made of stone at the base up to a height of two to three feet. Mud, reed and wood were used in building superstructures. No fortifications were discovered at Mohenjodaro and Harappa ; on the outskirts of Ali Murad and Kohtras were found fortified palaces made of stone, which was but rarely used in the plains not being easily available there. At sites around Lake Manchar, people lived in pile dwellings.

Bricks are ordinarily rectangular in shape.

Annagara (Granary).—Measuring 169 ft. by 135 ft. which comprises two similar blocks with an aisle, 23 ft. wide, between them. Each block has six halls, alternating regularly with five corridors and each hall is further partitioned into four narrow divisions.

(2) Workmen's quarters, which comprise fourteen small houses built in two blocks separated by a long narrow lane. Each house is open on all sides, rectangular, and consists of a courtyard and two rooms.

The achitecture of Mohenjodaro, in general, is plain and utilitarian, rather solid than beautiful. There are no sumptuous temples as in Sumer nor monumental tombs as on the Nile. In contrast to Sumer there is an absence of round columns, recessed doorways, and 'semi' circular plasters. The true arch was unknown and the corbelled arch and square or rectangular columns were used instead. The aim in the Indus Valley was to make life comfortable and luxurious rather than refined or artistic.

The construction of the swimming bath reflects great credit on the engineering of those days. To make it watertight and its foundations secure, "the lining of the tank was made of finely dressed brick laid in gypsum mortar about 4 feet thick, backing this was an inch thick damp-proof course of bitumen". Further stabilized "by another thin wall of burnt brick behind it, then came a packing of crude brick and behind this against another solid rectangle of burnt brick encompassing the whole". That is how this tank, about 5,000 years old, is still so well preserved.

According to Dr. Mackey, "These ablution places were meant for the priests, while the Great Bath was for the general public.

The careful town planning, adequate water-supply, and efficient drainage system presuppose an advanced state of civic authority. Lamp-posts at intervals indicate the existence of street lighting. There was also a watch and ward system for different quarters, and large caravanserais and public store houses were provided. That the sanitation was well looked after is seen from the rubbish heap consisting of broken pottery, ashes and humus found in deep trenches outside the city. Trees and plants were allowed to grow in the enclosures. The later levels of the city, however, show the decline of civic authority, as buildings were erected in a haphazard manner, there were encroachments upon lanes and potters were quartered in the city.

(*a*) Houses were on both the sides of the streets.

(*b*) In between the houses there were "narrow lanes" approximately 3 ft. wide.

(*c*) No building encroaching upon the road, whereas in contemporary Mesopotamian and Egyptian civilization—this pattern is not found.

The most imposing structure in the city is the "Great Bath"—180 ft. long × 109 ft. wide.

(*a*) A large open quadrangle in centre with gallaries and rooms on all sides.

(*b*) In centre of quadrangle is "Swimming enclosure" 39 ft. × 23 ft. and 8 ft. deep with flight of steps at either ends.

(*c*) Fed by a well in one of adjoining rooms.

(*d*) Water is discharged by a huge drain covered with a "corbelled roof" more than 6 ft. high.

The construction of bath-room credits on the engineering of those days.

II—The lining of tomb made of finely dressed-bricks 'laid in 'gypsum mortar' about 4 ft. thick, backed by bitumen, further stablized by another thin wall of 'burnt bricks'.

There is a solid rectangle of burnt brick encompassing the whole, that is, only this tank of about 5,000 yards still survived.

Near south-west corner is Hammam or hot water Dr. Mackey suggests general bath for public use.

CHAPTER XV

Trade and Commerce

Only country capable of producing food on large scale and presence of a river sufficiently large to facilitate transport, irrigation and trade can give rise to cities like Harappa and Mohenjodaro.

(2) Excavation have revealed the Trades were in vogue both by rivers, roads and sea-routes.

According to Dr. Sawkalia :

> "Recent survey of Makram coast by George F. Dales and his colleagues on behalf of "University" museum of Pennysylvenia confirm that "Sutkagendor" could have been a port on Arabian Sea, and had established "Trade and Commercial relations" with Egypt and Mesopotamia by sea route."

Dr. Sankalia and Rao opined that discovery of "dockyard at Lothal" leaves no room for doubt that Harappa established "Maritime"...contact with contemporary countries...probably Harappan objects unearthed at Mesopotamian may have been exported from Lothal.

Besides, representation of a "mastless ships" on a seal with a central cabin and a steerman seated, indicates that Indus Valley people were acquainted with maritime vessels. Dr. Mackey thinks that Indus Valley was in touch with Sumer and Elam by sea-route also.

GOODS OF FOREIGN COUNTRIES :

(a) *From West*...Bitumen, alabaster and probably steatite from Baluchistan.

(b) *From Persia*...Gold, silver and tin-lead. Two semi-precious stones especially "Lapis blazuli" is certainly Afghan origin, most probably from Badakshan.

(c) *Southwards*...(Kathiawad Region)...agates, cornelians, chalcedony.

(d) *East of Indus* (Rajputana)...most likely provided the "copger" and and lead (from Bijnor). Also steatite, slate, jasper, green chalcedony.

(e) *Nilgiri Hill*...Also provided some metalic amazonite.

(f) *From Kashmir and Himalaya*...

(i) Devdar wood...probably floated down by rivers,

(ii) *Salajit* used in folk medicine.

4. All these trade, within the boundaries of Harappa Kingdom must have involved considerable " merchant class " with caravan and Trade routes.

(b) *For heavier transport.* Ox carts extensively used as "model of carts in clay" are most common antiquities on pre-historic sites of Punjab and Sind.

(c) *River traffic.* No direct evidence, however, two boats representation (1) one on a pottery sherd (2) the other exhibits a mask "furled soil a steer-man. Clearing "Bronze model" from Harappa and Chanhudaro represents very similar to the "Ekka" of modern time though not concerned with trade and transportation.

(6) **In addition.** How much 'cotton' was exported from pre-historic India is not known in the absence of written record ; however, probably *cotonies* (as suggested by Stuart Riggott) of Indian merchants were settled in Sumerian towns.

Little evidence is available of the article brought back to India, generally "Spices and Pepper" were the trading articles with West in 3rd millinium B. C. Incense was also a marketable commodity.

CHAPTER XVI

Arts and Crafts

This is one of the most scientific and logical methods to judge the culture of any people. Though the 'seals and sealings' of the Indus Valley civilization are in a class of their own, the range of "Harappan artistry" is not comparable with that of the contemporary civilizations of Mesopotamia and Egypt.

Here we would discuss the issue purely on the basis of available materials. We cannot have the "Artistic Intelligence" of Harappan culture as they are not preserved anywhere.

The various aspects of *Arts and Crafts* may be discussed on the basis of the following :

(1) *Clay figurines*, which may be further divided into sub-clauses :
  - (a) Animal figure and
  - (b) Human figure.

(2) *Stone Statuettes* :
  - (a) Animal and — of both varieties, conventional arts, and naturalistic.
  - (b) Human

(3) *Seals and Sealing*. These are so many artistic depictions.

(4) Copper Tablets.

(5) Pottery.

(6) Beads and other ornaments.

The most monumental products of the Indus civilization are the stone sculptures. Apart from two disputed statuettes from Harappa, Statuary have come to light" of which three represent animals.

Of the eleven stone sculptures, it will be observed that our represent a 'stereotyped squatting figure' presumably of a God. Two are those of human figure and unfinished.

CHAPTER XVII

Rangpur

Rangpur is situated on the Bhadar river, in the former Limbdi state, 30 miles to the north-east of Lothal (in saurashtra) and about 3 miles from Dhandhuka Railway station. Clear picture of the various town or village plans or houses of this culture.

Rangpur has a chequered history. It was hailed in 1934 as the most southerly site of the Indus civilization ; in 1947 further exploration was thought disprove its Indus association, but six years later renewed excavation replaced it on the Indus map. Still insufficient investigation suggests that the earliest occupation was marked by crude microliths of jasper and agate, without pottery. This was succeeded by a settlement protected by a mud brick wall over six feet thick and marked by a culture which may be described as a povincial variant of that of the Indus civilization.

The mound at Rupar is nearly 50 ft. high, and occupies a strategic position at the junction of the plains and the Himalayan foothills, Here the Sutlej enters into the fertile plains of the Punjab. Owing to this fact, it was repeated by inhabited and also destroyed, as it lay on the path of the invaders. The several strata show six cultural periods, of which the first two fall within the proto-historic period, I, constitutes the Harappan and its derivatives, and therefore it is subdivided into two phases. Its lower deposits exhibit a late phase of the mature Harappan, while the upper deposits introduce near ceramic traditions.

It exhibits all the characteristics typical of this civilization brick structure, drains, mud brick, fortification (or rampart) pottery, ornaments, tools, weapons and weights. Yet, so far, the seal or sealings and figurines of Mother Goddesses have not yet turned up. Among the pottery shapes and designs is a bowl with a low stand and a peacock painted in black over a red surface. While the design is typically Harappan, the ringed base seems to herald later features noticed in Period II.

It included triangular terracotta cakes, faience and steatite heads, a chert blade, and pottery with a peacock pattern, all allied to Indus types. Its thick red pottery, on the other hand, painted in black or chocolate with loops, dots, criss-cross, and horizontal and oblique lines, is less distinctively Harappan. It is to be expected that dilution or partial survival of this sort should occur near the perephery of the civilization.

Without apparent signs of destruction by flood, fire or force in Period II, one witnesses new pottery fabrics, shapes and designs. The earlier brick houses seem to give place to those of mud brick. The blades are of jasper instead of flint. Bowls with fine red lustrous surface, thin walls and a short solid stand are the striking feature of the pottery. These and others are painted with highly stylized "deer motive, chair like legs and wavy horizontal horns", the bukranian, and a design which, though described as a palm "fonde" is in truth a horse's head with mane. Alongside this is another pottery, a black and red ware with paintings in white.

Rangpur

Rangpur excavation revealed a basic microlithic industry without pottery, succeeded by a chalcolithic culture containing Indus civilization elements, which was in turn followed by a culture described as 'late-Chalcolithic' with red and buff pottery suggesting an organic development from the previous phase. The late phase also contained in its top level, sherds of black and red ware which had a technical similarity with the "megalithic" pottery of southern India. This black and red ware of which more will be said, is not normally earlier than 1000 B. C. and is otten much later, but it certainly occurs, in small quantities, with late Indus valley material at Lothal, which is only 30 miles north-east of Rangpur, and a similar association has now been observed at Rosadi in mid-Kathiawad. Painted Grey Ware which in the north marks the lower bracket of our Dark-Age (1000 B. C. or somewhat later).

So far only Rupar and two sites nearly called bara and Salaura have been pratically excavated. These have yielded very significant evidence regarding the relationship between the Harappan and later painted grey ware. In addition, at Rupar itself the ware was found over the two phases of Harappan culture. The Harappan occupation at Rupar took place on the fluviatile sandy deposits, Salaura, began with Painted Grey Ware. This juxta position proves that the Harappan is the earliest culture in the region, and painted grey ware came much later.

Interesting, however, are the burial practices. These confirm once again the fact that the cemetery was a little distance away from the main habitation area. It is now a low mound, about 160 ft. to the west of the inhabited area. This was disturbed by the Painted Grey Ware People. However, some skeletons have remained in tact. The grave pits, 8 ft. × 3 ft. × 2 ft. were dug into the natural soil. Within this pit, the body was placed in an extended position, with the head usually towards the north-west. In one case, the body lay north to south. Most burials made group of pots at the head, feet and on the sides of the body. But in one burial, the pots seemed to have been arranged first and then covered with earth. The body was placed last and the pit was finally sealed. The number of the pots was not uniform, but varied from 2 to 25. This might be according to the status in life of the individual buried, and so give some idea of the needs, while alive and dead.

Not much is known about the houses, though four phases of the Harappa buildings were encountered, because the excavations were limited in extent. However, one can definitely say that from the very beginning the first settlers used the local material in the shape of river pebbles, roughly hewn kankar stones, besides the traditional material, mud bricks and baked bricks with which they were familiar. Mud was also used as mortar.

While the ornaments of faience, and various other beads, the steatite seal, terracotta cake, chert-blades and bronz celts are but replicas of the few well-known sites of Mohenjodaro and Harappa, and need no comment, the pottery assemblage shows a few variations, which might be explained as a regional phenomenon, or as the excavator thinks, a degeneration or a new feature.

CHAPTER XVIII

Central Indian Chalcolithic Culture

In Ganges basin. There have heen found two types of pottery :

(1) Ochre coloured ware,

(2) Painted Grey Ware.

In Gujarat Culture. We find some Harappan objects and also of Central Indian Chalcolithic cultures.

In Saurashtra Culture. There have been found a distinctive culture in three different periods.

(1) In Ist period, we find Microlithic culture.

(2) In IInd period, we find Harappan culture.

(3) In IIIrd period, we find Harappan objects less abundanely, but few new objects are added in the culture of third period.

In Nagda Culture. Nagda is situated, on the eastern bank side of the river Chambal, to the north-west about 35 miles from Ujjain. It is marked as the northern outpost of this culture. The mound, where this civilization explored, was about 90′ high. But its upper level of the mound, about 30' is included with the remains of the ancient cultures. The first period of the culture is about 22' in thickness. There have been found a massive structure of mud brieks, in which there appears a Burj in fort's wall. Some copper objects, and stone articles have been found in this period of culture. These stone articles might have been used as is indicated by the signs, which have marked on the articles. The pots are normally red but cream ware has also confined to this culture, usually these pots are painted mainly in black or chocolate colours. Wavy hatched band, sun motifs, deer and peacock motifs are recognized on this ware.

Ujjain. It is situated on the river side at Shipra. There have been found a culture of two different phases. In Phase I of the culture, have been found a black...and red ware with iron articles. With this culture, also have been brought to light some little pots of the painted Grey Ware culture. This city is surrounded by mud fortification walls.

In Phase II of the culture, have been found N. B. P. Ware. The infiuences of the towns of the Ganges basin are appeared clearly at this culture.

2. Maheshwar.
3. Nagda.
4. Navditoli.

1. Maheshwar. In Maheshwar (in Central India), probably the Mahismati of the Mahabharata, on the northern bank of the middle Narbada, with the confronting site of Navditoli on the south side, have been found a number of occupation layers on the Black Cotton Soil. This deposit is from 5 to 8' thick, and may be ascribed to the second quarter of the Ist millennium B. C. It is followed by a deposit no less than 20' thick containing a number of occupation layers marked by a large baked or mud brick, soakpits lined with bricks or pottery rings, iron implements (sickle, hoe, nails, arrow heads, spear-heads), punch marked coins, N. B. P. Ware and Megalithic Black and Red Ware. Certain Ganges objects also occurred in this culture (a mixture of dominant Ganges elements with certain others of a more southerly kind). Above this deep occurred a finely burnished red ware with 'Sprinklers' of a type found at Chandravalli (Mysore) and in Western India at Kolhapur, Baroda and elsewhere in layers dating from the early centuries A. D. From this crowning deposit, the Megalithic Black and Rew Ware was absent. N. B. P. Ware was found in large quantities and in varieties which were partially perhaps local products, some of them diversified with bands of black or saffron paint.

The Iron Age occupation was marked by iron spearheads, arrowheads, knives, choppers, and caltrops, by four legged saddle querns and pottery ringed soakpits, and by N. B. P. and Black and Red Wares. Traces of mud walled houses were identified, but their plans are unknown. Above this phase come Russet Coated (Andhra) wares and sprinklers of red polished pottery all characteristics of the Ist century A. D. Burnished black and rimless bowls and shallow dishes and red globular jars with a gritty cored.

In the second period of this culture, we find a Black and Red Ware. This black and red ware is known to have black inside of the pots and red outside of the pots and called as black and red ware. Such types of pots were fired in inverting technique, so it is known as inverted firing method.

Here, we find some earthern pot with microlithic objects on the one hand, which certainly indicate to the slavery of 'Stone Age' as present in this culture and on the other hand, they had achieved a great skill in the use of metals as is evident from the copper fragments.

Nevasa. At Nevasa on the Paravara rirer, tributary of the Godavari, between Ahmadnagar and Aurangabad 150 miles east-north-east of Bombay, a hard cemented basal gravel (I) which is capped successively by two further gravels (II aud III) aud a thick layer of yellow brown silt, has produced teeth *Bos nomadicus* and both *Elephas nomudicus* and *hippopotamus* have been found in comparable gravels of the Godavari itself. As between the Soan and and Narbada, a faunistic equation of this kind seems to make sense, but it muse be confessed that a similar equation between the Soaa and the Pravara, which produced *Bos namadicus*, is said to have yielded a handaxe cleaver industry of Early Middle Acheelian type (using trap and dolerite), whereas the Boulder conglomerate of the Soan, which produced *Elephas namadicus*, yielded only the crude 'Pro-Soan' industry. This apparent unconformity may represent a true technological variation between the two regions, or my be due rather to contemporary differences between the tropieal and the slbmontane fauna ; but it needs watchiny, and illustrates the period of hasty equation.

Here Wals found the normal industry of the copper ; two gravels was of another kind, consisting of scrapers, blades, cores, burins and poins of agate, chert, chalcedocy of Jasper. Here is an acceptable upper Palacelithic craftsmanship of a sort a present inadequately represented in our Indian material.

CHAPTER XV

Black and Red Ware.

Association of a fine black topped and red bottomed pottery called the "Black and Red Ware" (the Egyptian Technique) or the pots, which are painted internally with black colour and outer side with red colour, called the Black and Red Ware.

This type of pottery have been found at three different sites of the distinctive settlement of the area explored by the excavator. The different sites are enumerated as under :

(1) Lothal and Rangpur (ns excavations and explorations of the sites revealed the Harappan settlement area).

(2) Central Indian Chalcolithis Culture (this were is found some where with N. B. F. Ware culture).

(3) South Indian Megalithic culture (Iron using Megalithic culture).

Only Iron objects have been found in this culture, with the wares, so it has been named as Iron using megalithic culture.

It is due to its special technique, the pottery of all places are called as a Black and Red Ware. These three sites were are quite different or distinctive in its forms, fabrics designs and its paintings. But apart from this type of pottery, we also find some other traces of fragments, on all the excavated and explored sites.

Find-spot and its Distribution

Among the find spots of this culture are mentioned below respectively :

Lothal (near the village Saragwala in Dholka) Taluka of Ahamedabad district in Saurashtraj, Rangpur, (situated on the Bhadar river in the former Limbdi State, it is about 3 miles from Dhandhuka railway station), Jaugada (district Ganjam, beside the Rishikulya river in the southern Orissa), Maheshwar (in Central India, probably the Mahishmati of the *Mahabharata* on the northern bank of the middle Narbada, with the confronting side of Navadatoli on the south). In south-east RaJputana, in the valley of the Banas and the Chambal (excavated by R. C. Agarwala). Navadatoli (1952-53-75-59 excavated) of the Malwa culture and is situated opposite Maheshwar on the Narmada, about 60 miles south of Indore, Navasa and Nagda (excavated in 1955-57) and also some other places of Central Indian Chalcolithic culture. The wares, which have been found towards the the Malwa regions are named by Wheeler as a Malwa Ware.

Potsherds of the distinctive Settlements of the Cultures.

A large number of group of vessels have been found at this distinctive sites, though all these pots are quite different in its forms, fabrics, designs, and ite paintings. Findings pots are mentioned below respeciively :

> As suggested by she scholars that the Lothal is an exact replica of a true Harappan town as might have recalled a similar vessel from the earliest period at Sialk, in Iran. A band of running antelopes and dancing human figures seem to be characteristic designs in this fabric. In Period III, there also occurs, for the first time a new fabric called "Jorwe" after the type site, in the Deccan which is quite distinctive pottery fabric from this. This site (Malwa) peoples has been pointed by Sri Lal as Haihayas or a mixed Aryan tribe from Iran.

In south-east Rajputana in the valley of the Banas and the Chambal, Sri R. C. Agarwala brought to light a culture which by its characteristic pottery is known as the "Painted Black and Red or Cream or Ahar Culture" after the type site Ahar in the city of Udaipur.

Especially in Maheshwar, in Central India, there also occurs, "Burnished, Megalithic, Black and Red Ware in the form of rimless bowls and shallow dishes and there are red globular jars with a gritty core. The Iron Age is marked by this ware and N. B P. Ware also.

The question is further complicated because a black and red ware is found throughout at Lothal. This means the ware was known to the Harappan civilization in Saurashtra. In the first phase of Ahar culture, the ware is polished on the outside only, while in Phase II, the fabrics becomes finer and is polished inside as well as outside. South-eastern Rajputana, however, was not a pure inland of Black and Red Ware Chalcolithic culture. This is well illustrated by the rather extensive excavations near Gilund, about 45 miles north-east of Udaipur.

Apart from this within this culture we also find some remarkable traces of iron that may have been survived by the excavations and explorations on the sites, indicates that "Iron Age" came into existence and begrn to be built various tools and weapons, relating to this culture to the same emergence, and is often much later, but it certainly occurs, in small quantities, with late Indus Valley material at Lothal which is only 30 miles north-east of Rangpur, and a similar association has now been observed at Rosadi in mid-Kathiawad.

Sri S. R. Rao points out that till 1000 B. C., the Harappan culture was still present at this site (Rangpur). And after 1000 B. C., the *Lustrous Red Ware* came into existence especially at site and most probaly in contemporaneity of Lustrous Red Ware or sometimes later, Black and Red Ware has also flourished in these regions. Apparently both wares appear in Period II, of Third phase at Rangpur.

2. Central Indian Chalcolithic culture are dated from about 1800 B. C. to 800 A. D. The absence of Painted Grey Ware and the presence of Iron closely followed by N. B. P. pottery shows that this penetration from the northern plains occurred not appreciably earlier than the 5th century B. C. So this culture has been suggested and dated by most of the scholars as 500 B. C. to 800 A. D. (it is dated on the basis of N. B. P. Ware, that have been found with this culture).

3, South Indian Megalithic culture is dated by the scholars from about 5th or 4th century B.C. to 1st century A.D., was flourishing in Madhya Bharat.

The Navdatolians had a large number of pottery vessels, which according to their fabric, shapes and designs fall into four distinctive groups, each having certain shapes and designs associated with a particular period. The most common is a pale red slipped fabric with paintings in black over it. Since this occurs throughout Malwa (an old geographical name for parts of Central India), it is called the Malwa ware. This occurs as a major pottery fabric right from the first occupation and runs through the entire chalcolithic habitation. However in the earliest period only certain shapes and designs of figure, both becoming more varied later.

Then there is a sprinkling of black and red ware, with paintings in white, comprising generally bowls and cups. This fabric is confined only to Period I and seems definitely to be an import from the adjoining region of Rajputana, where at 'Ahar' it occurs in profusion.

Thus it copied some of the shapes of the Malwa ware, its own distinctive shapes are a shallow dish with broad flat rim and stand and a high concave walled cup with bulging bottom. An almost complete bowl of the latter in fine white slip is characterized by the finding objects from this site. There is a black and red ware or cream ware which is throughout contemporary with the usual ware. While this ware is different in the technique of manufacture, it shows no new form. Some of the Harappan forms are copied in it.

However, a few new ceramic forms are visible in Period II. These are supposed to be evolved from the earlier ones and virtually ousted the latter. These new forms include a bowl with blunt carinated shoulder and a simple dish without carination on a squattish stand. Gol lets, beakers and perforated jars are absent.

"Designs." While some old designs like hatched and filled triangles and oblong and alternatively hatched squares are common with Period I, some designs such as snakes, very realistically drawn, stags and ducks are new. If these and others also occur in Period I, then Lothal should be regarded as not mature or true Harappan but, as Wheeler calls it, a "Sub-Indus" variety. Other potsherds designs, motifs and paintings are similar to the Harappan cultures.

Along side, to the Rangpur Period II culture, there lies another pottery and that is named by the scholars as a black and red ware, with paintings in white. It shows new pottery fabrics, shapes and designs. Most probably in the second century B. C., black and red ware, loops, dots, criss-cross and horizontal and oblique lines is less distinctively Harappan.

CHAPTER XX

Amusements and Pastimes of the Harappan People

A very interesting aspect of the discoveries made in the Indus cities is the large number of toys and objects used in games, which have been unearthed at all the three sites excavated. Those that have survived are made of pottery, shell and ivory, but wood must also have been largely used for this purpose, although it has, of course, long since perished.

The favourite toy seems to have been a little pottery cart, to judge from the number of specimens which have been found, though usually in a damaged condition. These miniature carts are practically identical in design, on a small scale, with the farm carts seen in the villages round Mohenjodaro today, and the presence of these toys in the cities is ample proof that the full sized vehicle was well known and in constant use in the Indus plains. No model which can be said to represent a war chariot, or anything like it, has yet come to light, which supports the view that these peoples were not warlike and were only threatened by enemies when their civilization was nearing its end.

There are some agreeable toys, usually made out of baked clay, though here it is not always possible to make a sharp distinction between children's toys and figurines which might adorn a household shrine. But cattle with movable heads that waggle with a string and monkeys that slide down a rope and owing to the deliberately bent perforation, can be stopped at will by tightening the string, are clearly for fun and not for worship, and the same may be said of many of the toy-carts. The model cart made of clay was a favourite toy in early historic India' and indeed "The Little Clay Cart" is the title of one of the best known plays of ancient India, written somewhere before the eighth century A. D. the plot turns on the hiding of jewels in a small boy's toy-cart. Then there are pottery whistles made in the shape of a hen or other bird, which can be made to give a surprisingly loud cooing noise when blown in the right way.

A couple of bricks have been found roughly scored with lines marking out a game : one contains part of the whole pattern which might either have been similar to a known Sumerian games-board or another type from Egypt. The other brick has a row of depressions into which pebbles or something similar, such as beans, could be flicked, in the manner of the games of certain African tribes. Both bricks probably came from pavements, and contrive to give a convincing picture of house-hold servants playing, and probably gembling, in a shaded corner of the courtyard.

The children in those days seem to have enjoyed modelling in clay as much as the modern child, for numerous animals and figurines have been found which are so poorly made and baked that they must certainly be of child's workmanship. Small models of bulls have been discovered, some of them with the model carts, 'a fact which suggests that this animal was used for draught purposes even in those early times, while the small seated clay figures unearthed from time to time were probably used in the ever popular game or 'houses'. No dolls have, as yet come to light, perhaps, because they were made of perishable material. Rattles in the form of hollow balls of clay with pellets inside were common especially at Chanhudaro, which seems to have specialized in the making of toys. Some of these rattles were gaily decorated with lines of red paint.

Little toy birds, a few of which were crudely coloured and provided with stick legs, are quite well known, while a small model of a bird with its beak open—evidently singing—in conjunction with some miniature cages, which have been found, seems to show that song birds were kept as pets. These cages occur in all the cities and one of them has an obviously tame bird, perhaps a bulbul, coming out of the door. Other examples, however, may have been intended to house a cricket or other chirping insect. A whistle shaped like a bird by means of which various call notes may have been imitated was evidently very popular, while another favourite toy was a small animal climbing up a pole. Up to the present, the animal is still unidentified, but it was probably a common pet.

Little scale pans of pottery, pierced at the edge, with the holes for suspension, have been found at both Mohenjodaro and Harappa and from their crudeness, these also appear to have been made by children.

The making of model household vessels was also a favourite pastime, and some of the specimens have the finger-prints of the amateur potters indelibly baked in the clay.

Marbles, balls, and dice were used for games. Marbles were used as playthings both in Sumer and Egypt. The dicing was common pastime. Just as it was in Vedic times is indicated by the large number of dice unearthed. Both cubical and tabular specimen are found, the latter being the commoner. Unlike the oblong pieces in common use in India at present, they are usually cubic in shape like the European dice ; but arrangement of numbers differs from the European system (when the sum of points on any two opposite sides amounts to 7) 1 being opposite to 2, 3 to 4 and 5 to 6. The tabular dice invariably made of ivory, have the sides marked with numbers 1, 2 3 and the inremaing side is decorated with longitudinal lines. Of the seven pieces found at Harappa four bear markings, like those of Mohenjodaro, on two are marked 1 opposite to 2, 3 to 4 and 5 to 6 an one has markings like the modern dice (1 opposite to 6, 2 to 5 and 3 to 4). Thus there were three different ways of marking dice in the Indus Valley. It is not certain whether the throwing of dice constituted a game in itself. Possibly dice were used in conjunction with board games, as two incomplete specimens of game boards of brick have been found. Some flat models of fish in ivory appear to have been been used in some game.

For a number of objects have been discovered in both cities, which are undoubtedly "men" used for the type of board game in which dice seem indispensable. The boards on wich the men were moved must have been mode of wood, for none have survived. Many boards have been unearthed from early levels at Ur, but it is uncertain, whether precisely the same board games were played in the contemporary Indus cities. Incidentally similarly marked piece has been found as far away as Tepe Gawra in the north of Irap, with other evidence of Indian contacts. This use of dice is interesting in view of the great popularity of gambling on some game of chance among the Aryans whose arrival in India, marks the end of the Harappan civilization.

Some representations on amulet seals showing men shooting a wild goat and a large antilope with bows and arrows, and the remains of large antlers of deer and stags indicate that hunting was indulged in. Bull fighting was probably another pastime. There are indications to show that birds were kept as pets and also for fighting. A certain amount of trapping was also carried on, and fishing was a regular occupation. A copper specimen has been found at Harappa, which looks like an Ekka of the present day, with a canopy for protection from the sun and rain. Bullock carts with a gablet roof over a wooden frame were also in use. Some peoples were raising weights for the entertainment and for recovering the health.

A large number of small cones of hard baked pottery, shell or more rarely, stone are difficult to explain, but as the once sharp points of many of them are missing, they are likely to have been tools or playthings. Dancing was perhaps included amongst the religious rituals, but that it also had a secular side is very probable. That dancing was accompanied by music is certain for an elongated drum with a skin at each end is seen on two of the amulets.

It is possible that game cock fighting was as sport, for as has been said, two jungle fowls that appear on an amulet seal are portrayed in a fighting attitude. If the partridge also was trained to fight, it would not be surprising for even now in Sind, this bird is kept in cases for this same pupose. Pottery model cages have been found at Indus sites. On two amulets men are shown in the act of shooting with bows and arrows a large antelope and a wild goat. Dog and boar were used in hunting.

At the end we can say in the words of Sri Sen Gupta,

> "Gambling was obviously a favourite amusement and various kinds of dice have been found as well as counters, somewhat resembling chess men, were the best resources of amusements and pastimes of the Harappan people "

CHAPTER XXI

Economic Condition of the Indus Valley People

Agriculture. Only a country capable of producing food on a large scale, and the presence of a river sufficiently large to facilitate transport, irrigation and trade, can give rise to the cities of this size. The large number of saddle querns found in the excavations indicates cultivation and methods of agriculture adopted by the people. The examination of the specimens of wheat and barley found in the ruins shows that they were not of the wild species. The same variety of wheat is cultivated in the Punjab today. The unit of weight indicates that rice was also grown. The date palm was also an article of diet as it is shown by the stones found. Harappa cultivated peas and sesamums. In addition, animal food was eaten, including beef, mutton, pork, poultry, the flesh of the gharial, turtle and tortoise, fresh river fish and dried fish from the sea and also shell fish. The half burnt shells and bones of these animals found in houses, lanes and streets definitely indicate that they were articles of diet.

Expert examination has revealed this wheat to be of the species still cultivated in the Punjab. It is not certain whether wheat or barley was the first cereal cultivated by man. Both have been found in the earliest graves of Egypt. The barley found at Mohenjodaro is of the species found in pre-Dynastic graves in Egypt. It is believed that both wheat and barley are Asatic in origin.

At Harappa the agricultural output was under municipal control, with great granaries strangely foreshadowing those of the Roman army. In the absence of any effective grinding machinery, flour was produced by organized grain pounding by coolie labour which was housed in miserable rows of identically planned two-roomed cottages. There is a terrible efficiency about the Harappan civilization which recalls all the worst of Rome, but with this elaborately contrived system goes an isolation and a stagnation hard to parallel in any known civilization of the Old World, though perhaps not without comparable situations in the New, among the ancient South and Central American civilizations.

At Harappa itself the first town on the site, overlying a peasant settlement related to the North Baluchistan culture area, is already in all its known respects typical of the culture in its full maturity. There must have been a strongly established commercial code aud a standardized technique of production which could control the sizes of bricks, the capacity and type of pots (turned out on the wheel in a variety of depressingly utilitarian forms), and the system of weights and measures.

Skeletal remains testify to the following animals being then domesticated : the humped-bull, buffalo, sheep, elephant, camel, pig, and fowl, and possibly dog (of which several terracotta figurines have been found) and horse. Remains of the following wild animals have been found : mongoose, shrew, black rat, and deer, and also figurines of bison rhinoceros, tiger, monkey, bear and hare.

Metals and Minerals. There was use of gold and silver, of copper, tin and lead, but iron was absolutely unknown. The gold used has been found to contain an alloy of silver known as electron, and must have come by trade from places like Kolar and Anantapur in the south, where such gold is found. Gold was used for making ornaments.

The copper used along with lead must have come from Rajputana, Baluchistan or Persia, where lead is found in association with copper ores. Copper had now taken the place of stone for manufacture of weapons, implements and domestic utensils such as lance-heads, daggers, knives, axes, chisels, or ornaments like bangles, ear-rings, etc. Copper is found here in the earliest stratum, earlier than 3000 B. C. That it was extensively worked in India in very early times is proved by the find of 424 hammered copper implements at Gungeria.

Tin was not used by itse f but as an alloy with copper so as to form bronze containing 6 to 13 per cent tin. Bronce was preferred to copper for producing sharp edges or finer finish. Being found in the earliest stratum, it must have been in use before 3000 B. C. This disposes of the theory held that there was no Bronze Age in India at all. The sources of tin or bronze used in Sind must have been outside India, North Persia, and Western Afghanistan, from which they came by way of the Bolan Pass. The only Indian source was Hazaribagh District.

Various stones were used for building and other purposes and came from places far and near. The Sukkur limestone was used for covering drains. The Kirthar hills supplied gypsum used as a mortar and alabaster for making lattice, screens, vessels, and statues. Harder stones of the neighbourhood, like gneiss and basalt, were used to make saddle-querns and mullers, door sockets or weights. Chert was chipped and ground into weights and polishers or flaked for use as knives. Steatite was used in the making of seals and statuettes. The yellow Jaisalmir stone is the material found in statues and cult objects like Lingas and Yoni rings. Many varieties of semi-precious stones were used for beads and ornaments, such as rock crystal, haematite, carnelian, jasper, agate or onyx. The fine green amaron stone came from Doddabetta in the Nilgiris as it is the only source in India, and amethyst from the Deccan trap. *Lapis lazuli* came from Badakshan, turquoise from Khorasan and jadeite (hard jade) from the Pamirs, Eastern Turkestan or Tibet. Other materials were also used such as bone, ivory, shell or faience. Shell came from the coasts of India, and Persian Gulf or the Red Sea.

Numerous spindle whorls found in the houses of Mohenjodaro testify to the common practice of spinning and that among the rich and poor alike, as shown by costly whorls of faience and cheaper ones of ottery or shell. The material for textiles was both wool and cotton. Scraps of cotton found adhering to the side of a silver vase have been found by expert exmination to resemble the present-day coarse Indian cotton with its typical convoluted structure. Thus this indigenous Indian cotton was known to the Babylonians as Sindhu and to the Greeks as Sindon, and was a true cotton and not a product of the cotton tree as hitherto believed.

The pottery sherds, utensils, ornaments and weapons, have thrown interesting light on the achievements of economic condition as well as trade and commerce.

There is good evidence of trade between the Harappan Kingdom and those of Sumer and Akkad. Yet the decisive technological advance marked by the making of axes and other tools with sockets for the handle known in Mesopotamia from the beginning of the third millenium, never reached the metal smiths of the Indus and the Punjab. Indeed, so far as we can tell, it is likely that the first shaft-hole axe seen at Mahenjodaro was brandished by an invader from the west who took part in the sacking of the city, perhaps about the middle of the second millennium B.C. There is further evidence that Harappan traders and probably colonists, were in South Baluchistan at the time the Kulli culture was flourishing there, and the cemetery at Nal seems to be that of people having some contacts with the civilization of Indus and the Punjab. At this cemetery was dug into the ruins of a settlement of Rb IIIc folk, this again fits in well with the evidence of str tigraphy at Harappa itself. It looks as though the urban culture of the plains was approximately contemporary with the hill peasantries making pottery in the style of Kulli-Nal and Periano Ghundai ; only approximately contemporary, as the Harrapan folk arrived in South Baluchistan, and that of Nal is likely to have gone on rather longer than the period of maximum prosperity of the Harappan Kingdom.

Thus the growth of these early cities depended on agriculture and trade.

CHAPTER XXII

Kulli Culture

It is a new culture, found in the excavation, made by Stein in the Kotwa region of the South Baluchistan. It is distinguished from the other cultures of the period on the basis of its distinctive style of the painted pottery, which has been found in a limited number of sites of the South Baluchistan. The well-known sites of the culture are Shahi-Tump, situated on the banks of Kej river in Baluch Makran, and Kulli itself, which covers an area of about 200 square yards. This type of culture has been discovered from a place named Mehi. Both of these cultures are identical.

At Shahi-Tump the objects found in the mound can be said quite definitely that they are of the Kulli culture. Early in the 2nd millennium B. C., the late intruders used it as a burial ground. Here fortunately a sufficient number of sherds was recovered to show that this was a site of prolonged Kulli occupation. In Section VI of the trench, Stein encountered a massive stone wall six feet thick.

At Shahi-Tump two building phases, noted by Stein, and possibly third, were identified in superimposed deposits, all apparently of the same culture. Similar indications of a probable defensive wall at Mazena-damb in South Baluchistan (as noted by Stein) and at the Siah-damb of Jhau, may have existed. Stone was employed as normal building material, which was brought from at least 2 miles distant, at the type site. A somewhat similar use of stone is seen at Adasta-damb, which surface finds suggest, is of the Kulli culture. Mud bricks (of unspecified sizes) were apparently used in addition to stone at Mehi, while a wall of the latest occupation level at Shahi-Tump had stone foundations and an upper structure of mud bricks each 19 by 10 by 3 inches.

So far as the cemetery of Shahi-Tump is concerned, pretty well dated and is contemporary with the end of the Harappan culture in the Indus valley, so this fits in well with the other evidence for the relative date of the Kulli culture. The bull figurines and an incised pot, excavated at Shahi-Tump about which Stein was uncertain whether it was pottery or stone, was considered by Piggott, as without doubt a Kulli settlement.

Town Planning of the Kulli culture.—At Kulli was found a flagged paving and some indications of a wooden flooring ovor a cellar (as noted by Stein and Piggott). Here, too, as at Nundara, stone walls were sometimes faced internally with white plaster. At Kulli rooms ranging from 12 by 8 feet to 8 by 6 feet were found and the same type of windowless and doorless cellars as at Bundara occurred. The lower treads of a stone stairway at Kulli, as noted by Stein add Piggott, may imply access to a flat roof or to an upper storey. But owing to the scanty excavations, in the sites of the culture, little can be said of the town planning of the Kulli culture.

Burial rites or cemetery. At Kulli was found a flexed inhumation burial at a depth of 4 feet in the debris of the settlement, but there were no grave goods at all, therefore, its association with the culture is unproven.

At Mehi, burials and minor variations of the cremation rite (which seems to have been performed on the spot) were observed (as noted by Stein). In some burials the cremated bones were in pots; in others deposited directly in the soil; while in one, six children's skulls had been placed over a single cremated adult (as mentioned by Piggott). Here only ten burials were found in a trench 75 feet long by 6 feet wide, where pottery clay figurines and copper objects comprised as the grave goods.

Piggott mentions that "the position of the cemetry, on the slope of the mound and so outside the settlement area, would allow of its being coeval with the final phase of occupation of the site."

Pottery Wares and Ceramic Cultures of the Kulli site. Majumdar suggests that "there are two ceramic strains, representing an earlier painted ware local to the region on which impinged a plain ware, manifestly an offshoot of the Harappan culture; of these two, the decorated pottery alone should perhaps be credited with the title 'Kulli' and the hybrid types which are formed with this and the Harappan ware, be distinguished as a 'Mehi Phase' from the site, where it is best represented." But Piggott suggests that "it is safer to treat the hybrids along with the rest of the painted pottery." Piggott further suggests that "the traces of its influence of pottery styles, are perceptible into Eastern Persia, the culture does not appear to have crossed the mountain barrier eastwards into the Indus plain; though the influence of its pot painting traditions are recognizable on alien wares in the Lake Manchhar and in the Gaj Valley."

Kulli pottery have some special decorative schemes, paintings and ornamentations of geometric pattern or designs, are manifestly an offshoot of the Harappan culture.

Chief Characteristic of Kulli Pottery :

(1) Its pottery is very distinctive in its fabrics, forms and its painting over a pale red or whitish slip surfaces.

(2) The actual paste of the pottery is normally buff or pinkish, the former is relatively soft but the latter. like the Harappan ware, usually somewhat harder.

(3) Pots were generally painted in black colour but with an occasional use of red in broad horizontal bands were also applied to the pots, apparently show the influence of the Harappan wares (black on red ware).

(4) Grey ware is also used for large storage jars. There have been also found a small proportion of hard, fine, pale grey sherds (sometimes with burnished surface and of simple profiles).

(5) There is a varied repertoire of forms. The main shapes consist—dishes on stands (probably due to Harappan influence), globular beakers, small based flasks, tall bottle shaped vases, small flat dishes, straight sided cups, squat straight sided jars and tall, cylindrical, perforated vessels (which might be braziers or cheese presses). Large storage vessles, sometimes painted and sometimes plain, have a globular profile and applied cordons on the shoulders, sometimes with an applied wavy band as well.

(6) The technique of painting is entirely in black, with a flexible brush and within an outline the interior of the animal is filled by a pattern of thick stripes or by a neat diagonal cross hatch of fine lines.

(7) Painted design includes the following :—

(a) Zones of non-representational motifs (between which runs a frieze of naturalistic representations of animals and plants).

(b) Frieze forms a single continuous band around the pot.

(c) Geometric ornament is varied very rarely in panels and normally in zones.

(d) A wavy hatched hand between horizontal lines, double triangles (point to point), rare metopic patterns, hatched triangles, diamonds and lines of solid triangles point to base are frequent.

(e) A band of pendent loops is another common pattern, and the 'Sigma', and the 'Eye' motif of a dot within a circle or oval are also common.

(8) Red paint is sometimes used as a second colour in the form of broad horizontal bands above and below the main decorative zone of the vessel.

(9) The eye is always exaggerated and drawn as a full circle of white, round a black disc, and the whole body is fantastically lengthened though realistic detail is given to the legs and hoops.

State Museum Lucknow

Kulli figurines.—A most interesting and attractive features of the Kulli culture, as studied by Piggott, is the frequent presence of baked clay figurines of women or of cattle. Most probably these little figurines can be regarded only as toys, while the female figurines as deities in household shrines. Kulli figurines are of clay and only animals are painted. Cattle figurines were found in the restricted areas Stein dug into at Kulli, and no less than 85 were found in a restricted area on the lowest occupation floor at Shahi-Tump (as mentioned by Piggott). The female figurines, although less abundant than those of cattle, are widespread among the sites of the Kulli culture and are of very great interest. These female figurines are well hair dressed and ornamented like those of Harappan Bronze Dancing Girls. Piggott remarks it as "Kulli girl in a foreign city".

There are few other miscellaneous objects which have been found at Kulli.*

Clay wheels (for such movable models have been found more than once), stone saddle querns (indicate that corn was ground and therefore grown). beads (including *lapis lazuli* and agate) an odd 'ritual pillar' (of polished purple-red and white variegated stone, 8 inches high and 4 inches in diameter at the base) and a single fragment of sheet gold. While at Mehi have also been found the following objects : bits of clay models of carts (also at Shahi-Tump), may be explained in terms of Harappan imports),

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*"Various rosettes and other symbols fill the background on some pots, as childe, has remarked a '*horror vacui*, reminiscent of that of the Dispyton vase painters of pre-historic Greece.."—(*Piggott*) They are mentioned below :

a very important group of vessels (carved out of soft stones), bronze mirror handle (similar mirrors have been found in Egypt, Susa in Elam and also at Mohenjodaro), clay figurines of women, two copper pins (found in the Mehi cemetery, one with each mirror), copper bracelets, bowls (small in size), a pin (which is roughly bent over head) and combs a cubical banded grey chert weight, 0.85 inches square and 0.6 inches thick, of exactly of the Harappan type and a clear example of an import which in its very associations suggests traders in Baluchistan. Clay bangles occured at Mehi and Siah Damb and bone fragments came from Kulli. A bone stud with a drilled cruciform design also occurred among the grave goods in the Mehi cemetery (as mentioned by Piggott, in his book "Pre-Proto History of India").

Comparative assessment of the Kulli Culture. On the basis of Pipal leaves, cart model, pottery wares and Shahi-Tump cemetery (indicates the end of the Harappan culture), of course, that there was an approximate contemporaneity between the Kulli and Harappan culture. There is also good evidence that trade exchanges did take place, and goods and even people found their way. One of the outstanding pieces of Harappan art is a bronze figure of dancing girl and it is most interesting to find that her hair-dressing is just that are seen on the Kulli figurines, with a heavy loop of hair carried over the nape of the neck, and that (again following the Kulli fashion) she wears a couple of bangles at her right wrist, two above the elbow. We can say, in the words of Piggott, that the merchants returning from the Baluchi hills may well have brought back with them women as well as merchandise.

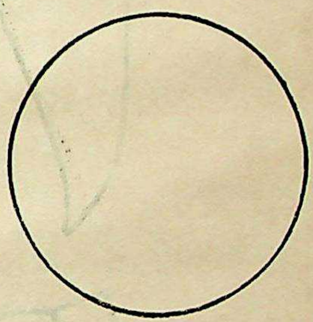
The landscape with animals, frieze on the Kulli pots finds close stylistic parallels on pots known from Susa and Khuzistan and also from the Diyala region near Baghdad. It has also got similarity with the lands of Elam and Mesopatamia. (In Mesopatamia and just over the Syrian border at Mari some eight or ten stone vessels have been found) which are of precisely the same type of those from South Baluchistan. Probably humped bull of the Kulli culture was also carved out by a Sumerian artist.

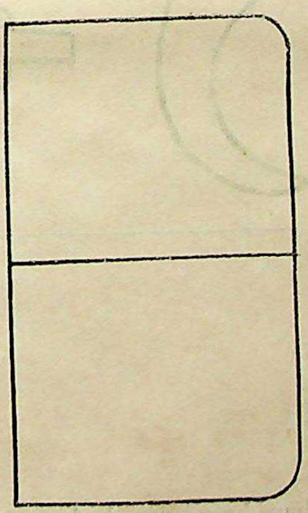
CHAPTER XXIII

Beads and their Shapes

These are the beads, which have been found on Harappan site :—

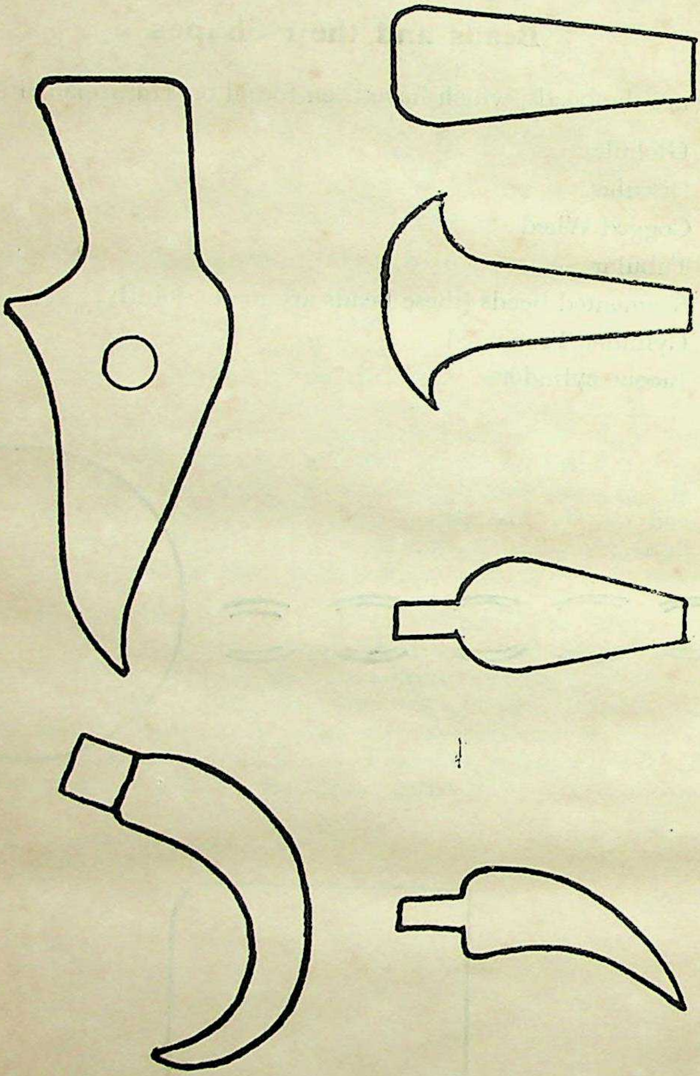
1. Globular
2. Discular
3. Cogged Whed
4. Tubular
5. Segmented beads (these beads are made jointly)
6. Cylinder Trunoated
7. Bicone cylinder





Mackey believed that even an expert artist had taken three days, for completing the beads.

Mohenjodaro impliments of Bronze & Copper



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1. **Gold**
2. **Copper.**
3. **Carnelian,**
4. **Steatite,**
5. **Paste**
6. **Faience**
7. **Clay**

These all materials have been unearthed out from the Indus sites.

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